Exhibit 6

UNITED STATES DISTRICT COURT

DISTRICT OF NEW JERSEY

IN RE JOHNSON & JOHNSON TALCUM POWDER PRODUCTS MARKETING SALES PRACTICES, AND PRODUCTS LIABILITY LITIGATION	) MDL No. 16-2738 (FLW)(LHG)
THIS DOCUMENT RELATES TO ALL CASES	)

VIDEOTAPED DEPOSITION OF

LAURA WEBB, Ph.D.

BURLINGTON, VERMONT

FRIDAY, MARCH 29, 2019

9:28 A.M.

Reported by: Leslie A. Todd

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Deposition of LAURA WEBB, Ph.D., held at the:

HOTEL VERMONT
41 Cherry Street
Burlington, Vermont 05401
(802) 651-0080

Pursuant to notice, before Leslie Anne Todd, Court Reporter and Notary Public, who officiated in administering the oath to the witness.

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(Attached to transcript)

P R O C E E D I N G S

THE VIDEOGRAPHER: We're now on the record. My name is David Lane, videographer for Golkow Litigation Services. Today's date is March 29th, 2019. Our time is 9:28 a.m.

This deposition is taking place in Burlington, Vermont, in the matter of Talcum Powder Litigation MDL.

Our deponent today is Laura Webb, Ph.D.

Counsel will be noted on the stenographic record.

Our court reporter today is Leslie Todd, who will now swear in the witness.

LAURA WEBB, Ph.D.,
and having been first duly sworn,
was examined and testified as follows:

THE VIDEOGRAPHER: You can begin.

MR. BURNS: You want appearances on the record or --

THE VIDEOGRAPHER: You can just begin.

MR. BURNS: Okay. Thank you.

Dr. Webb, before we get started -- and, Mr. Frost, this is directed to all -- we're going to lodge an objection on the record related to the

provision of new materials considered with respect to Dr. Webb's report.

By our count, we're looking at, between last night and this morning, a total of 14 new maps, approximately four new articles, and one new analysis of the Pooley Vermont samples, and -- that were not previously disclosed and which we have not had a chance to consider.

As a result, we're going to hold the deposition open until such further time as we've either reached an accommodation or the court has figured it out.

MR. FROST: Well, we obviously object to that. We also object to the characterization of what additional materials were provided on the -- the reliance list. We think it is significantly smaller than that.

We also object to the characterization of the Pooley data as, one, being new, and, two, being an analysis. I'm sure you will ask your questions about that today. We'll figure it out.

So, you know, your objection is noted, and so is ours.

MR. BURNS: All right.

DIRECT EXAMINATION

BY MR. BURNS:

Q Good morning, Dr. Webb. My name is Warren Burns. Again, we met right before the deposition. I represent the plaintiffs in the MDL. I'm from Dallas, Texas, and I will be questioning you today.

Dr. Webb, have you ever been deposed before?

A I have not.

Q Okay. A couple of simple rules for the road then. If you need a break, I'm more than willing to let you take one at any time. I only ask that if a question is pending, we get that out of the way, get the answer on the record, and then you're more than welcome to go. So just let us know if that's the case.

If at any time I am unclear, which certainly will happen probably multiple times over the course of this day, please let me know. I'm happy to clarify anything I say.

You are obviously an expert in many things, and the -- of which I am less familiar. So if I am unclear, please let me know, and we will try to get on through it.

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What did you do to prepare for your deposition?
A Well, I met with counsel. I reviewed the reports, including my own. I reviewed the body of literature that I've been looking at.
Q Okay. Now, when did you meet with counsel?
A Multiple times.
Q Do you recall the dates?
A I -- well, yesterday and last Friday as well.
Q Were those meetings here in Burlington, Vermont?
A They were.
Q How many lawyers were present?
A Yesterday, two, and last Friday, three.
Q Do you recall any other meetings?
A Yes, there were prior meetings. I just don't remember the dates offhand.
Q Okay. Approximately how many prior meetings would you say?
A Two to three.
Q Okay. Now, during the course of your preparation for this deposition, were you shown any documents that refreshed your recollection?

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A I was not shown any documents.
Q Now, Dr. Webb, I'm going to mark this as Plaintiffs' Demonstrative No. 1. It's nothing too serious, just a little roadmap for us as we go through the day today.
I intend to cover approximately four issues with you as we go through today, and we'll check them off as we get through them all.
The first is your response to the notice of deposition and subpoena that you received prior to the deposition.
The second involves your qualifications which underpin your testimony and report. I want to make sure I spell that right.
The third involves your preparation to render your opinions.
And the fourth is your report and opinions.
So I want to start with actually the subpoena. I'm going to hand you a few documents that we have premarked. First will be Exhibit 1, your report, or what I believe is your report.
(Webb Exhibit Nos. 1 through 3 were premarked for identification.)

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BY MR. BURNS:
Q Exhibit 2 is the -- Exhibit 2 is the Notice of Oral and Videotaped Deposition of Laura Webb, Ph.D. and Duces Tecum.
And Exhibit 3 is Defendants' Response to Plaintiffs' Document Request contained in Notice of Oral and Videotaped Deposition of Laura Webb, Ph.D. and Duces Tecum.
There you go, Dr. Webb.
A (Peruses document.)
Q Ready, Dr. Webb?
A Yes.
Q Okay, great.
So let's start with Exhibit 2. This is the Notice of Oral and Videotaped Deposition of Laura Webb, Ph.D. and Duces Tecum. It's dated March 14th, 2019.
Do you recognize this document?
A I do not, no.
Q You don't recall seeing it before?
A (Witness shakes head.)
Q But you are appearing today to give testimony with respect to a report you previously issued; is that correct?
A That's correct.

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Q And is that report reflected in Exhibit 1, Expert Report of Laura Webb, Ph.D., for General Causation Daubert Hearing?
A That appears to be the very report, yes.
Q Okay. Thank you.
Now, I would like you to look at Exhibit 3, Dr. Webb. That's Defendants' Response to Plaintiffs' Document Request contained in Notice of Oral and Videotaped Deposition of Laura Webb, Ph.D. and Duces Tecum.
Do you see that?
A Yes.
Q Okay. Are you familiar with this document?
A No, I'm not.
Q Okay. You don't recall seeing it before?
A No. I saw the notice of deposition, but I have not seen this.
Q Okay. Before coming to the deposition today, did you search your files for any relevant documents?
A Before -- sorry. What time frame are we talking about?
Q Well, let me ask a different question

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then.
Prior to your deposition today, were you informed that plaintiffs were seeking documents from you at the time of this deposition?
A I knew there -- I mean, I know there are documents requested in the notice of deposition, and counsel is responsible or, you know, responded to those. But that's --
Q I see. But did you -- were you personally informed that you needed to look for documents that were responsive to your requests from the plaintiffs prior to your deposition?
A I -- I provided everything that is in my reliance, but in terms of in the last few days being charged with searching my -- my records, no.
Q That's right. And we're really talking about that period between March 14th of this year, 2019, and the present.
So you don't recall being asked to search for additional documents during that period?
A I was asked to make sure that my reliance list was complete.
Q Okay. And do you recall when you were so instructed?

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A Oh, I believe we talked about that last Friday.
Q Now, again, staying with Exhibit No. 3, Dr. Webb, the first -- let's see -- the first 19 pages contains quite a bit of legal -- legal mumbo-jumbo that you're probably not too interested in that we may or may not fight about down the road with your lawyers.
But after that, the next page is titled Expert Report of Laura Webb, Ph.D. for General Causation Daubert Hearing, Supplemental List of Materials Reviewed.
Do you see that?
A Yes.
Q Okay. Is this a document you prepared?
A It is. I provided that list.
Q Okay. And you provided it to counsel?
A Yes.
Q Okay. Do you recall when you prepared this list?
A On Monday.
Q Okay. That would be Monday, March 15th?
A This past Monday, the 20 -- whatever. Yeah.
Q Maybe 16th.

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A Excuse me.
MS. O'DELL: The 26th -- 25th.
MR. BURNS: It's the 25th. Okay. Oh, you're right. It's the 30th -- or 29th today. I apologize.
BY MR. BURNS:
Q Okay. So you prepared this document on Monday, March 25th, and the document contains 11 supplemental materials that you reviewed; is that right?
A Yes.
Q Okay. And the first five appear to be maps; is that right?
A Yes.
Q Okay.
A Or maps and reports in some cases, yes.
Q Okay. Can you tell me which ones also represent reports?
A Number 1, 3, and I believe number 5. Number 4, I'm not sure about.
Q And just so I understand, because there's a little bit of confusion on our side, when you listed these materials, and 1, 3 and 5 contain reports --
A Mm-hmm.

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Q -- is there any way we can figure that out from the -- from the -- from your citation? The citation appears to contain the title of the maps, but does that correspond to the articles as well?
A I mean, these are USGS report -- reports, open file reports. In some cases they're maps in a numbered series. So the general citations don't necessarily, yes, reveal that.
Q Okay. Now, the next item is "Zodac, P., 1940, A Talc Quarry Near Chester, Vermont."
Is that an article that you reviewed?
A Yes.
Q And item 7, Deposition of Ann G. Wylie. Is that a deposition transcript?
A Yes.
Q And next one is Expert Report of Ann G. Wylie. Did you have access to the entire report?
A I did.
Q And the supporting materials?
A Can you define "supporting materials"?
Q Yeah, the documents that would have been cited as the list of materials reviewed or relied on.
A I only read the expert report, so I

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didn't -- there may have been some common materials cited, but I did not dig into those, so to speak.
Q Okay. The next one is Deposition of Mary Poulton, and that's a deposition transcript?
A Yes.
Q Next is Expert Report of Mary Poulton. Did you read the entire report?
A I -- I read good portions of it. I think there were some areas that I skimmed.
Q Did you have access to the whole report?
A I did, yes.
Q And did you review the materials reviewed or relied upon?
A No.
Q Next one is expert report of Darby Dyar. Did you have access to the full report?
A I did, yes.
Q And did you review that full report?
A I did. Again, portions -- some portions I read in more detail than others, but I did see the full report.
Q And did you review the materials reviewed or relied upon?
A No.

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Q Okay. In Exhibit 3, Dr. Webb, if you go down, if you go to the end of the exhibit, there appear to be five maps or graphical representations that are part of these materials.
A Yes.
Q Okay. This may be a little difficult, but if we could stay with your supplemental list of materials reviewed. Can you tell me how these maps correspond, if at all, to those supplemental materials?
A Well, the -- the geologic map --
Q Now, we're looking there at the map that says "Google Earth Image, U.S. Geographical Survey"?
A Yes. So there are basically two map backdrops. There's the one that is much more complicated looking, and that is the Vermont State Bedrock map by Ratcliffe, et al., 2011.
Q Is that the first map in the material?
A Yes. And then the second one is the metamorphism tile from Doll, et al., 1961.
Q And if I can just pause you there. You said the first map was from Ratcliffe, and what was the date on that?
A 2011.

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Q 2011. Okay. Now, that isn't listed in your supplement materials, is it?
A No. It's cited in my report.
Q Okay. And now, if you wouldn't mind proceeding to that second map.
A Yes.
Q Okay. And how does this correspond, if at all, to your supplemental materials?
A It does not.
Q Okay.
A I mean, I will make -- so the link between the supplemental materials and these maps are the -- the pushpins that mark the locations of certain mines or geologic bodies, for example. So when I first put this together, this is a Google Earth compilation. In terms of locating these bodies, in some cases on this Ratcliffe, et al., 2011 map, I also compared with maps, these more detailed quadrangle maps.
Q Okay. And when you refer to the more detailed quadrangle maps, you're referring to those that are listed in your supplemental materials?
A Yeah. So it was in providing this that I recalled I had looked at these many months ago

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when I was determining locations, and that's why -- I haven't looked at them recently. This is why they were added as a supplement.
Q I see. Okay. So the second map we were looking in -- looking at, another Google Earth map, is this map cited in your report as well?
A Yes, it is. It's Doll, et al., 1961.
Q Now, let's turn to the third map. A lot going on in this one.
A Yes. This is a -- I zoomed in on the Chester dome area. So it's the same background map as the first one.
I'm sorry, I cut you off there.
Q No, that's fine.
Okay. So the third map is a zoomed-in version of the first map focusing on the Chester dome.
A That's correct.
Q Is that right?
A Yes.
Q And that is Ratcliffe, 2011?
A Yes.
Q Now, the fourth map, what are we looking at here?
A That's the zoomed-in version of the

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Doll, 1961 map. So my -- yeah, generally I was trying to show the detail that you can't see in the first two.

Q Okay. And how do you -- is it D-A-L-L?

A I'm sorry?

Q Is Doll D-A-L-L?

A D-O-L-L.

Q D-O-L-L. Okay.

All right. And that leaves us with I believe one map. The fifth map, what is -- what are we looking at here?

A That's zoomed in further at the northern end of the Chester dome.

Q From the 2011?

A 2000 -- Ratcliffe, 2011, yes. Sorry, Ratcliffe, et al.

Q Okay. And this is the northern end of the Chester dome?

A Yes.

Q Okay. Let's start with -- I guess really the Ratcliffe map that's reflected in maps 1, 3, I think, and 5; is that right?

A Yes.

Q Okay. When did you prepare this map?

A Well, I began compiling this information

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really when I was first retained by Shook Hardy & Bacon.

Q And was that in 2017?

A That's correct.

Q When you say you began compiling this information, what do you mean?

A I mean by determining the exact locations of -- of different geologic bodies on this backdrop of the -- the bedrock map of Vermont and the metamorphism tile.

Q Can you give us an example in this first map, the Ratcliffe, 2011 -- Ratcliffe, et al., 2011, of the type of specific information you were trying to show on this map?

A Yeah. So, again, for example, the Ludlow area mines, I was trying to determine the exact location of -- of those mines with regard to the geology.

Q Okay. And can you tell me where those are reflected on this map? I see, on your pushpins; is that right?

A Yes, yes.

Q Okay.

A So you see there's -- maybe two-thirds down the page almost, the Hammondsville quarry,

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the northern end of the Chester dome. Then -- sorry, so again some things didn't show up well at this -- at this area. So Argonaut would be near the Rainbow and Frostbite mines, and then Hamm mine is further down.

Q And these pushpins carry over then to your zoomed versions?

A They do, yes.

Q Okay. And if you look at that map number 3, Argonaut mine, for example, there's pushpins somewhere sort of in the upper middle of the page; is that right?

A Yes.

Q What was your purpose in compiling this information and creating this map?

A Well, it's critical to understand the location of the mines with respect to the distribution of -- of geologic units, and in particular -- of particular interest is also the metamorphic grades of these rocks, which is why the Doll map is -- is used. Because the geology is actually very complex. There's -- I mean, three collisional orogenies that -- that give rise to the overall structure of -- of geologic units here.

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And so there are pretty dramatic changes and grades of metamorphism over short distances, and I had to understand exactly where the mines were with regard to the metamorphic histories recorded by the rock units.

Q So how would you manipulate these maps to assist you in -- in coming to that understanding?

A I wouldn't manipulate them. I would just refer to them.

Q Okay. And perhaps that's the wrong term, but I assume you mean -- you're probably not looking at map number 1, but you're looking and trying to zoom in at times on maps 3 and 5 to get a better sense of the surrounding geology. Is that fair or --

A As a geologist, I'm always moving in and out of scales, from thinking about the whole state of Vermont scale to, again, the micron scale and samples. So, yes, moving in and out of zoom ranges is part and parcel.

Q Sure. Is it important then in addition to having sort of general maps or larger scale maps to have those much more finite and detailed maps of particular regions or areas?

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MR. FROST: Objection to form.
THE WITNESS: Yes, I found I was referring to those in detail because some bodies -- the level of detail shown in maps is a function of the scale of the map itself. So the 1:24,000 quadrangle maps show some finer scale details than the Ratcliffe map, but this was the best map available, the most up to date, and the best one for the -- the compilation of the data.
BY MR. BURNS:
Q And when you refer to the compilation of the data, do you mean plotting these multiple points, multiple mine sites on a single map?
A I mean, that's part of it again. It's, again, understanding the -- the system, the geologic system, the distribution of the rocks and the rock types and those geologic structures such as faults.
Q But if you were wanting to look at a particular -- a particular mine site -- for example, let's say the Argonaut mine or the Johnson mine -- you wouldn't want to start -- stop at map number 1 or even map number 3 or 5.
Would you want to get as much detail as possible and as much of the minute scale as

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possible when you were considering the geology of the area?
MR. FROST: Objection to form.
THE WITNESS: Yeah, well, I mean it depends on where the outstanding questions are, where you're driven to, in that sense.
BY MR. BURNS:
Q Okay. Well, if the question -- outstanding questions were, as they are in this case, say, proximity of a talc deposit to potential asbestos, amphibole or other materials, would you want that higher scale, more minute scale?
MR. FROST: Objection to form.
THE WITNESS: Again, I mean, you know, what I'm driven to search for is a product of what I'm -- I'm finding, and so -- and also what -- what actually exists.
BY MR. BURNS:
Q Well, and maybe I can be clearer, and I apologize if I'm not.
But as a scientist of your experience, and clearly you have published a lot and have significant length of time in this field, but if you were looking at, say, the Argonaut mine and

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ultimately wanted to opine on whether there was a potential for asbestos contamination in talc deposits in that mine, is it fair to say that you would want to drill down on the most finite or specific information, including maps on the Argonaut mine, before you made that opinion?
MR. FROST: Objection to form.
THE WITNESS: I mean, maps are part of it, but I was really looking at a much broader range of petrological information.
BY MR. BURNS:
Q So is the answer then that you would not want that fine level of detail?
MR. FROST: Objection to form.
THE WITNESS: I mean, the answer is it depends. I mean, we're kind of -- I think I would need more specific -- more specific questions in order to give you a more specific answer. Sorry.
BY MR. BURNS:
Q Well, for example, if there was a geologic map of the Argonaut mine available, would you want to see that?
A I guess, yeah, if there was good data and -- and context there. But I actually, you know, felt that I had the information I -- I

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needed based on the -- the resources that I looked at to have what I think is a very good understanding of the -- the petrology.
Q As a scientist, is it fair to say that more information is better than less information?
MR. FROST: Objection to form.
THE WITNESS: It depends. It depends on the quality of the information.
BY MR. BURNS:
Q Assuming that the quality is good, is it fair to make that assumption?
MR. FROST: Objection to form.
THE WITNESS: I guess, yeah, we -- yeah, information is good if there's -- if you're able to evaluate the -- the real data and the -- the methodology.
BY MR. BURNS:
Q Would it be important for you to actually review data or maps that were prepared by, for instance, a company actually operating the mine and having day-to-day experience with the extraction of minerals?
MR. FROST: Objection to form.
THE WITNESS: It depends what's -- you know, what's shown on those maps, I suppose, in

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terms of detail.
BY MR. BURNS:
Q I'm sorry. Did you --
A Yeah, I mean, I was going to say, again -- I mean, I really feel like I arrived at -- with -- at a place where I had the information I needed to basically meet -- meet my charge.
Because, again, I mean, what you see in the rocks is -- is not -- is not random. What we see is very specifically controlled by the bolt composition of the rocks, the pressure and temperature conditions under which they were metamorphosed, the fluids that were present, and -- so I really -- you know, a good deal of my effort was really trying to understand, again, the petrologic systems of -- of these rocks -- sorry, these mines -- in detail.
And so, you know, that information was -- was pretty clear from what I was able to review in the literature.
Q Well, and just to be clear here, you're speaking, I take it, of your opinion generally as to the propensity for some of these formations to result in asbestos contamination of talc; is that

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right?
A Yes.
MR. FROST: Objection to form.
BY MR. BURNS:
Q And that is a general opinion, not a specific opinion. Is that right?
MR. FROST: Objection.
THE WITNESS: That's pretty specific to these -- to these mines.
BY MR. BURNS:
Q Well, so, for instance, did you use maps 1, 3 and 5 to reach the opinion that there was no asbestos contamination in the talc that was mined in what I will refer to as the J&J mines? I think you may use that term in your report as well.
A Yeah. Well, this was a starting point.
Q Yeah. What do you mean by "a starting point"?
A In other words, I had to know where the mines were with respect to the geology of Vermont, with respect to the structure. That is, again, the result of multiple orogenic events that basically have folded and stretched these rock units that have a major impact, again, on the distribution of different metamorphic grades.

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And really it's about sort of the -- understanding the location of these is what helped me basically place these rocks in the context of the -- the evolution of this region.
So again, yes, this was a starting point for, again, sort of other literature searches and -- and determining the -- the types of other information I needed to compile.
Q But just so I'm clear at this early stage in the deposition as to your opinion, is it your opinion that there is no asbestos contamination in the J&J mines in Vermont?
A I see no --
MR. FROST: Objection to form.
THE WITNESS: I see no evidence to support the claim that there is asbestos in these mines.
BY MR. BURNS:
Q Among the materials that you've reviewed?
MR. FROST: Objection.
THE WITNESS: Well, I mean, my opinion is my opinion, which is based on the review of -- of multiple papers, maps, and reports, and so, you know, I didn't really adopt something that was

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stated in the literature. I -- I synthesized all that information to arrive at the opinions I presented in this report.
BY MR. BURNS:
Q No, and -- and we'll get back to that, and I didn't mean to insinuate otherwise, Doctor.
My point was really simply that your opinion is based on the materials you've listed in your report; is that right?
MR. FROST: Objection to form.
THE WITNESS: Yes, I've provided the reliance, and that is what I reviewed to arrive at my opinions, yes.
BY MR. BURNS:
Q Okay. And so if it's not listed in the materials that you relied on, then it's safe to assume that it is not something that you utilized to reach your opinion.
A I'm sorry, I couldn't hear --
Q Certainly.
A -- the last part of your question.
Q Yeah, no problem. I -- I'll restate it.
So if -- if a material is not listed in the materials upon which you relied in your report or the supplemental listing that your counsel

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provided last night, then it's safe to assume that you didn't rely on missing material to reach your opinions.

MR. FROST: Objection to form.

THE WITNESS: I'm not sure what you mean by relying on missing material. So --

BY MR. BURNS:

Q I'll switch it around. Is there anything besides those materials that you have listed in your report or in the supplemental list that we received last night on which you've relied in reaching your opinions?

A No. To the best of my knowledge, I've given you a complete list. Beyond, again, sort of the -- my general experience and educational background. Certainly that plays in.

Q Sure. So you began compiling the maps that are reflected in 1, 3 and 5 in Exhibit 3 as far back as 2017.

When -- when had you completed the compilation of information that's reflected in these maps 1, 3 and 5?

A Is this the first one?

I'm sorry, I'm just looking in detail at what's listed --

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Q No problem.

A -- on here and trying to think if there was anything added in the last year, but I would say this has -- this has existed for a year or so. The exact dates I don't remember.

Q And that's true of the zoomed-in portions as well?

A Again, this is from a Google Earth database, so you zoom in and zoom out in real time. So...

Q The compilation of material doesn't change.

A Right, that's correct.

Q Okay. Now, how did you establish the location of the pushpins on the maps?

A Oh, there were a variety of methods. In some cases locations were taken from the published literature. And that could come in a variety of ways, from actual GPS coordinates listed to descriptions.

So, for example, the Newfane mine is something that was basically a -- a description in a paper that then I conferred with the detailed quadrangle map to find the location, and then added the pushpin to this larger scale map.

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Others, I -- I confirmed by -- you know, I did some actual just general web searches. And so, for example, I think some of the -- the mine locations are based on having seen town meeting documents where they talked about wastewater permits and gave the actual road that the map was located on. So it was kind of a variety of ways.

Q I see. Were there any other sources that you used to create those pinpoints that you can recall?

A No. I mean, nothing noteworthy. Again, I mean, based on, you know, literature references and then trying to confirm the most precise location, like I said, with some of those permits that I saw.

Q Okay.

A So...

Q Now, throughout the day we're probably going to use the term "J&J mines" just for ease of reference in Vermont and elsewhere, and, you know, between China and Italy, I can easily distinguish those.

But what's your understanding of the J&J mines in Vermont that were used to source talc for Johnson & Johnson Baby Powder or Shower to Shower

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products?

MR. FROST: Well, I will just lodge a general objection to referring to the mines as "J&J mines." If it's fine with you, we can call it a standing objection so I don't have to object every time you say it.

MR. BURNS: That's fine, yeah.

And just to cover your concern, I'm not imputing in any way that they were owned by J&J or controlled.

MR. FROST: Okay.

MR. BURNS: That's a different issue.

BY MR. BURNS:

Q But really the source for baby powder used in -- or talc used in baby powder or shower -- Shower to Shower products. Sorry.

A Yes.

MS. O'DELL: Excuse me. You aren't saying they weren't -- aren't presently, but they could be known to produce.

MR. BURNS: Right. Right. Fair enough.

MR. FROST: Yep, that's fine. Just, you know, I'll lodge my general objection, but I --

MR. BURNS: Understood.

MR. FROST: -- for ease of reference,

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that's -- that's fine, pending my objection.
THE WITNESS: So my understanding is that the talc for talcum powders came from the Hammondsville, Argonaut and Hamm mines.
BY MR. BURNS:
Q And that's a complete list?
A As far as I --
Q That you understood --
A Yeah, for -- for Vermont, yes.
Q Now, you've included in your maps pushpins for several other mines in the area. Why did you do that?
A So, for example, the Frostbite mine, I refer to a study by Robinson -- I believe that's the name -- Robinson, et al., 2006. So they looked at the Frostbite mine.
The Grafton mine was in the Sanford, 1982, paper that I cite. Newfane as well.
So in some cases, you know, these are mines where there were detailed studies done that are relevant to what I was trying to accomplish in -- in terms of my understanding of the petrology.
Q Okay. Now, can you -- I'm looking at map number 1 and do not see the Argonaut mine

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referenced there. Is that a function of the scale?
A It is. And that's why part of the motivation for blowing up certain regions for detail, yeah, because those names would have overlapped in the first, yes.
Q I see. It is reflected in number 3.
A Yes.
Q The third map.
A Yes.
Q Now, how -- now, Ratcliffe, 2011, was cited in your original report. How, if at all, did these maps 1, 3 and 5 inform your opinions in your report?
A Well, again, it's the understanding of where the mines are located relevant to the geologic structure of the Chester dome, which relates directly to the grades of metamorphism of the rocks that are exposed on the surface around the dome.
And so, again, this was kind of a starting point in terms of location and units and structure that then feeds into the petrological analysis as a function of -- of metamorphic grade and history.

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Q Now, you've referenced the Chester dome, which appears kind of on the right-hand side of the -- of many of these maps.
What is the significance of the Chester dome?
A So, again, that's the main geologic structure. I mean, I think it shows up probably perhaps best on the Doll, et al., 1961, map here in terms of that elongate north-south blob.
But again, this is a dome that has a -- a sordid tectonic past. So the structure of the dome is, again, the result of the tectonic Acadian and the Alleghanian orogenies, and the -- the metamorphism that's recorded by these rocks around the dome is -- is -- basically it's dominated by the -- the Acadian orogeny, and this is the time at which the talc forms, during that tectonic event.
But subsequently, the rocks have been folded, so you have actually the deepest -- so the rocks in the core of the dome record the highest pressures and the highest temperatures, upper amphibolite up to granulite facies. So that has a direct control on the types of minerals that you would see, for example, in the Grafton and the

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Chester Carlton quarries.
And as you move, in this case, west or north, you move to lower grades of metamorphism. So, you know, the Hammondsville quarry is at a lower metamorphic grade relative to the Grafton or Chester Carlton quarries. The Argonaut and Newfane mines, they're again sort of pre- -- virtually similar to the Hammondsville.
So, again, you know, basically you've got this high temperature, higher pressure suite of rocks in the core of the dome and lower grade rocks mantling it.
Q And when you refer to lower grades of metamorphism, can you explain that?
A So, for example, in my report, I think it's Figure 6, I've got a diagram with pressure and temperature and different -- what geologists call metamorphic facies. These are regions and pressure temperature space where we expect rocks of similar bulk composition to show similar metamorphic assemblages as a function of those PT conditions.
And so while rocks, say, at Grafton were metamorphosed around 700 or 750 degrees C, Hammondsville, Argonaut -- sorry, centigrade --

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Hammondsville and the Argonaut, Hamm, Newfane, those were all at what we would say Greenschist facies conditions, which is roughly in the range of 550 to -- or -- well, to lower amphibolite, so 550 to 575 degrees C.

Q Okay. To shorthand that, and tell me if I'm right or wrong -- and I appreciate your answer -- compared to the Chester dome then, would you say that the rocks in the J&J mines were formed in lower temperatures and lower pressure?

A Yes, compared to the core of the Chester dome. So the center of that -- that elongate body, lower temperatures of metamorphism and -- and still relatively high pressures but lower pressures as well.

Q And I heard you use the term "TP." Is that temperature and pressure?

A PT, yeah.

Q Or PT, pressure and temperature.

A Yes, that's correct.

Q Okay. And it is PT, not TP?

A Maybe we say PT because TP sounds too much like toilet paper.

Q That's a fair point.

A But, you know, they're just

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abbreviations, shorthand, yeah.

Q Let's look at the Doll maps then, 2 and 4.

Well, actually, just briefly before I leave the Ratcliffe, 2011, these were produced last night. Have these -- has the -- have the -- let me strike that.

Do the inclusion of these maps in your supplemental materials provided last night indicate in any way that they have altered or changed the opinions in your report?

MR. FROST: Objection to form.

THE WITNESS: No. Again, these were created prior to the submission of my report, and in fact -- I mean, basically these -- there's a version of this map as a figure in my report that shows locations. So...

BY MR. BURNS:

Q And is that true of the Doll maps as well?

A Yeah, nothing has changed with respect to the Doll maps. I -- I refer to the Doll maps and the isograds, which again relates to the -- isograd means, on a map, a contour of equal grade of metamorphism. So I refer to -- I speak about

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that in the report, and I refer to Doll, et al., 1961, as well as Karabinos, 2010.

Q Now, the Doll maps here, tell me about your process for preparing these maps. How did you do it?

A Well, the Doll map preexisted me, my birth, by ten years, but -- excuse me -- basically by, you know, georeferencing the -- the map. So you can line up the boundary of the state of Vermont in the map with the boundary of the state of Vermont that you see in -- in Google Earth. And similar to the -- the bedrock map of Vermont. So I basically had different layers on the Google Earth map backdrop.

Q And what was your purpose for doing that with the Doll maps?

A Well, it's, again, the same thing in terms of seeing where the mines plot relative to grades of metamorphism that are presented in -- in this map.

I mean, I guess I would say that -- yeah, I mean, the purpose for choosing this map, again, because it showed the -- the whole state. The areas around the Chester dome have been refined slightly by Karabinos, et al., 2010.

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Q Now, when did you prepare this map or this overlay?

A As I said, I mean, I've had it for at least a year on my computer. So -- again, this was really the starting point of my -- my work on this issue.

Q Okay. Now, map 4 is a zoom of map number 2, correct, showing more clearly the Chester dome?

A Yes.

Q And it also shows the Argonaut, Hamm, and Hammondsville mines; is that right?

A Yes.

Q Okay. Among others.

A Yeah.

Q Okay. I'll drop that pen about 20 times today, so don't worry.

MR. BURNS: All right. How about we take a short break, and when we come back, we'll go through the other maps we got this morning.

MR. FROST: Okay.

THE VIDEOGRAPHER: Going off -- going off the record at 10:27.

(Recess.)

THE VIDEOGRAPHER: We're back on the

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record at 10:46 a.m.
BY MR. BURNS:
Q Welcome back, Dr. Webb.
I'd ask you to turn to your list of supplemental materials in Exhibit 3 again. It's about 20 pages deep.
A Okay.
Q All right. And before we get there, I was discussing with your counsel, and I understand that the maps we had been discussing, the five maps in Exhibit 3, those were contained in your files; is that right?
A Yeah. I guess I'm confused by the terminology --
Q That's fine.
A -- of -- so --
Q I understood that. I just want to make it clear and hopefully --
A Yeah.
Q -- save us some time. Those were maps that you had developed and created, and -- and presumably were saved on your computer; is that fair?
A Yes. Yes.
Q Okay. And you provided those after

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being requested to search your files by counsel?
A Yes. I think I understand the wording now, yeah.
Q All right. Going back to that supplemental list of materials reviewed, I want to go through in detail each of the first five entries. Starting with Ratcliffe, N.M., parentheses, 1996, Preliminary Bedrock Geologic Map of the Andover quadrangle, Windsor County, Vermont, U.S. Geological Survey open file report, parentheses, No. 96-32, scale 1:24,000.
Now, in addition to identifying what will end up being a series of maps, this entry also reflects an article; is that right?
A Yes, there was a written report that accompanied this.
Q Okay. And when did you review this report?
A Again, probably around a year ago or so. I -- again, I added these to -- to the reliance list in response to having generated the files that we were looking at, the -- the Google Earth images. So I recalled that I had a folder of maps that -- that were used when I was generating the pushpins, et cetera, on that -- on that. So it

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was a long time ago.
Q Now, did you -- did you read the actual report?
A I went through sections of it.
Q Okay. Do you recall when you did that?
A It -- again, it would have been at the time that I was putting together that Google Earth project. So...
Q Okay. Can you describe for the Court how, if at all, your review of this 1996 Ratcliffe article informed your opinions that you're offering in this case.
A Oh, like I said, basically the primary purpose -- or one of the primary purposes for looking at these was, again, to aid my ability to put those pushpins in in the map. But especially when there were -- I did look through the map indexes, the descriptions of units, and also if there were written reports, I looked through those to see if there were incidences of reported asbestos and, you know.
Q Do you recall anything specific about this 1996 article that informed your opinions?
A No.
Q Now, Dr. Webb, we are going to hand

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you -- and this may be a little bulky, I apologize -- Exhibits 4A, B and C.
MR. FROST: I was going to say is there a better way -- a better place to put these? Probably not.
MR. BURNS: We can put them back after she identifies them.
MR. FROST: Yeah, I was going to say -- I just want to make sure we have enough room to even, like, plop them down here. Move my stuff over.
(Webb Exhibit Nos. 4A, 4B and 4C were marked for identification.)
BY MR. BURNS:
Q All right. Thank you.
So Exhibits 4A, B and C, do those correspond to U.S. Geological Survey maps that are associated with the Ratcliffe '96 report?
A Yes, these are three plates as part of that report.
Q I see. And I think I understand based on your testimony, but can you tell us again how, if at all, you utilized these maps in reaching your opinions or in your work?
A Yeah, so again -- well, I would just say

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with respect to this map, I think I used -- this preliminary bedrock geologic map of the Andover quadrangle had the written report associated with it.

And then the number 2 on that reliance list is the digital bedrock map, so that actually had the colored map. So I think I -- I referred to the color version of the map because the details jump out better at you, and then -- and then looked at that in comparison to the -- the written report.

I mean, I'll be honest again, it's been a while since I've looked at these, so I kind of have to lay them down next to each other to figure out their spatial relationships in terms of, you know -- again, they would basically add up to what we see in that Ratcliffe, et al., bedrock map.

Q And that was maps 1, 3 and 5 of the supplemental materials?

A Yes.

Q Okay. Thank you.

And so did you obtain these maps at about the same time you obtained the Ratcliffe 1996 report?

A These are -- yes. I mean, these maps

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are part of -- if you go to the USGS site for that -- that report, you have access to the -- the written report and these plates all together.

Q I see. And so you obtained them at the same time?

A Yes.

Q Okay.

MR. BURNS: Why don't we hand her Exhibit No. 2, and then we'll take them all away. Or, sorry, Exhibit No. 5A and B, if I remember correctly.

(Webb Exhibit No. 5A and 5B were marked for identification.)

THE WITNESS: Okay.

BY MR. BURNS:

Q And, Dr. Webb, do these maps correspond to the second entry on your supplemental list of materials, Ratcliffe, N.M., 1996, digital bedrock geologic map of the Andover quadrangle, Vermont?

A Yes, they do.

Q And were these the maps you were just referencing and using the colored versions?

A Yes.

Q Okay. And when did you obtain these maps?

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A It would be about the same time basically.

Q And --

MR. FROST: Excuse me.

MR. BURNS: Bless you.

BY MR. BURNS:

Q Can you tell us whether these maps in any way impacted your opinions that you rendered in this case?

A Well -- again, I mean, using them for finding locations, so it was -- it was a starting point. I would say also in terms of the review of the -- the map unit descriptions and -- and the reports, the -- the lack of any report of -- of asbestos in -- in them, yes, was, in part, contributed to my opinion.

Q When -- when you said "the lack of any report of asbestos in them," were you referring to the elements on the map?

A I mean in total, in terms of seeing if -- if there's reference to -- yes, asbestos of any type in terms of the description of the units in the -- the map area, but also in terms of -- of the descriptions in -- in the written report.

Q Now, Dr. Webb, just so I'm not

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testifying for you, when you were referring to that area on the right-hand side of the map, what -- what is represented there?

Sorry, the right-hand side.

A Oh, sorry. This is the description of map units. So for each different colored map unit on here, there is a -- an age assignment, as it's understood, and a basic description of the rock type.

Q Okay. When you say "a basic description of the rock type," what do you mean?

A So right up at the top, it says, you know, for example, a map unit that's sort of purple, it says "DG," which stands for Devonian dikes, and the description is by type, "muscovite, granite." So short descriptions of both minerals and/or rock names that are standard.

Q Within that unit?

A Within that unit and within, yeah, the map area.

Q Within the map. Okay.

And you said there was an age identifier as well?

A Yes.

Q Okay. How are those age identifiers and

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the rock or mineral identifiers developed? Who does that?
A It's the result of over a hundred years of work of geologists out in this region, so -- and USGS scientists, Vermont state geologists, academics who are -- and students who are involved in -- in mapping. So it's -- it's really a body of information that is refined over decades and decades of observation and analysis.
Q I see. Now, when you said you would look at the map units to -- and I'm not trying to put words in your mouth, but --
A Mm-hmm.
Q -- you said you would look to the map units to determine whether asbestos was identified. Is that right?
A Yeah. I mean, I was interested to see if it was mentioned anywhere, and then I would follow that -- that lead, but --
Q And what type or what designated map units would you be looking for to determine whether asbestos was identified?
A Well, it could be anything if it were there, but, I mean, of -- you know, of specific focus in this area of Vermont, of course, it's

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the -- it's the ultramafic units.
Q Okay. And who are those?
A What kind of -- sorry, what kind of information do you mean or are looking for?
Q Ultramafic units, what do you mean by that term?
A Uh, right. So these are rocks that are basically derived from Earth's mantle. They're very rich in magnesium typically.
Q And what are the -- can you give us some examples of those asbestos-bearing rocks?
MR. FROST: Objection to form.
THE WITNESS: I can give you an example of the ultramafic rocks --
BY MR. BURNS:
Q Yes.
A -- that we were interested in about that question.
But -- so, for example, here it says, "Ordovician to late Proterozoic ultramafic rocks. Map units OZU and OZT, serpentinite and talc, and also talc schist."
Q And those are the types of ultramafic units that might contain asbestos?
MR. FROST: Objection to form.

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THE WITNESS: They're the ultramafic units that are -- that are the protoliths for the -- the talc, ores in this case.
BY MR. BURNS:
Q How would they -- what's the association with asbestos in that context?
A Well, where asbestos is documented in Vermont, it's associated with some ultramafic rock units. More typically, I mean, the serpentinite and talc and talc schist here, these are basically the serpentinite formed during the tectonic orogeny, the talc during the Acadian orogeny.
The ultramafic rocks predated that. And where the ultramafic rocks are larger bodies that haven't been fully metamorphosed and recrystallized during these subsequent orogenic events, those are the rocks that -- that are reported to occasionally have those asbestos veins.
Q Okay. Now, when you use the term "asbestos," how would you define that term?
A I'm using that to refer to the six regulated minerals: So chrysotile, the asbestiform varieties of anthophyllite, actinolite, tremolite, grunerite and riebeckite.

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Q And you did say tremolite, right?
A Yes.
Q Okay. Have you reached any opinions in your report with respect to whether chrysotile asbestos may be found in the J&J mines?
A I have not seen any indications of that. And again, the chrysotile that is reported in -- in Vermont, it formed during the tectonic orogeny, generally at relatively low grades of metamorphism in conjunction with like fracturing and fluid infiltration of the rocks.
So, if it were present in the J&J mines, as we're referring to them, those units underwent very extreme metamorphism, deformation and recrystallization during the Acadian orogeny.
So, again, I haven't seen any chrysotile reported in -- in the area in that general belt of ultramafic rocks that we're concerned with, and if it had been present, I wouldn't expect it to survive the -- the Acadian metamorphic event.
Q And when you -- just to be clear, when you say you haven't seen any indication of the chrysotile, I assume you're referring to -- you are referring to in the list of materials you've reported in your report; is that correct?

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MR. FROST: Objection to form.
THE WITNESS: Yeah, I -- yeah. So, I mean, I -- in the documents reviewed. In the studies that I -- I looked at, no.
BY MR. BURNS:
Q All right. I think we can take these away.
A Thank you.
Q Now, I'm going to hand you a few documents under Exhibit 6.
(Webb Exhibit No. 6 was marked for identification.)
BY MR. BURNS:
Q Oh, just one document under Exhibit 6.
A Okay.
Q All right. Now, exhibit -- does Exhibit 6 correspond to the third entry in your supplemental list of materials, Ratcliffe, N.M., 2000, bedrock geologic map of the Cavendish quadrangle, Windsor County, Vermont?
A It does, yes.
Q Okay. And was there a report associated with this map?
A Not that I -- that I can recall, no.
Q And when did you obtain this map?

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A Again, it would have been at the same time as the others, a year ago or so.
Q Okay. And to what purpose did you put the data reflected in this map?
A I'm sorry. Can you --
Q To what purpose did you put the data reflected in this map or this map itself? What did you do with it?
A Well, so this is -- I can recognize this right away. This is the northern end of the Chester dome, and so there are these small units, OZU -- I think it says OZU. So this is the Hammondsville mine, and it's basically at the northern end of this map.
And so, again, an important aspect of -- of this and the detailed position of that ultramafic body or the talc ores that are associated with it, is its position relative to this fault that outlines the -- the Chester dome.
Q Again, what is a fault?
A So a fault is a geologic structure across which there is displacement, and that displacement could range from -- I mean, we have microfaults, so it could be millimeters or centimeters of offset, and in some cases, you have

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kilometers of -- of offset, like the San Andreas Fault, up to 300 kilometers there.
Here, there's a normal shear zone -- and I'll just explain that in a second -- a normal shear zone that bounds the -- the Chester dome, and it's a -- it's a high -- what we would call high strain, meaning if you started out with a -- something like a ball, it would be stretched into -- it could be a big, flat pancake or it could be a long cigar shape, or it depends on the nature of the deformation.
But basically the shear zone that outlines the Chester dome is the -- is part of what's responsible for the -- the major differences in the temperatures -- the higher temperatures that are recorded in the core of the dome relative to the units that flank it.
So, the Hammondsville unit would have been up here, and the core of the dome would have been up here, and after the faulting, basically they would be juxtaposed, and there would be a strong temperature and deformation gradient across that boundary.
Q And the last term you used "in gradient"?

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A A temperature --
Q Or gradient?
A A temperature and -- temperature, pressure, and deformation gradient.
Q And when you say that, what do you mean?
A Well, I mean that over a short distance, you could walk across rocks that record very different temperature and pressure conditions of -- of metamorphism. In terms of the deformation gradient, that would be going from rocks that -- I mean, everything is deformed here, but that are less deformed into rocks, that are more intensely deformed and stretched, and then back out into a lower strain or less deformation.
Q I see. Now, are fissures commonly associated with fault lines?
A They can be, but it depends on, again, the pressure, temperature, conditions. So this is really -- I mean, this -- this fault zone, the temperature gradient across it, again, is kind of in the range from, say, 700 degree C to, say, 550 degrees C. And at those temperatures -- and it also depends on the details of the mineralogy, but in general that's hot enough where minerals are deforming by slip along the crystallographic

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planes. So we refer to that as ductile deformation.

So when you have deformation occurring under these higher temperature conditions, we tend to not have voids or fissures opening up. That's much more common in low temperature deformation environments where the rocks are deforming brittlely.

Q Okay. Do you know whether in fact there are fissures associated with this fault line around the Chester dome?

MR. FROST: Objection to form.

THE WITNESS: I have not seen really any descriptions of such features. Again -- and in my experience, I've actually worked in the shear zone some, so my observation of rocks in the shear zone is that it's more a continuum of ductile deformation. We haven't -- haven't seen, yeah, fractures opening up, filling with other minerals, et cetera.

BY MR. BURNS:

Q How would you identify a fracture or -- are fracture and fissure synonymous?

A Yeah, I mean, we don't really use the word "fissure" in geology so much, or at least not

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in my lexicon. But I think, you know, it's pretty similar. I mean, a fracture -- and, again, there's different types of fractures. There are fractures that the rocks just pull apart. There are fractures where there's some, like, little bit of slip along them, and actually there's a slip this way or slip this way, so there's mode 1, 2 and 3 of fractures, yeah.

Q Okay. So how would you identify, in the field, a fracture?

A Uh, well, it's -- usually you would see some -- a feature that crosscuts structural fabric in the rock. So these rocks out here are highly foliated, means that -- what that means is that basically during the deformation, there are planar elements that form. It could be defined by compositional banding. It could be defined by the preferred orientation of minerals are in the -- in the talc. Often that's the -- all the talc plates would be aligned in that foliation plane. And so there would be some truncation of that -- that fabric.

And it depends on when the fracture forms. If it formed very recently, it might just be an -- an open space, but if there are fluids

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that have moved through there, you might have crystallization of minerals.

Q And would that be what you were referring to a few minutes ago when you said -- referred to sort of minerals filling in the fracture?

MR. FROST: Objection to form.

THE WITNESS: Yeah, I mean -- yeah.

BY MR. BURNS:

Q As a general principle, when you have lower pressure and lower temperature, are the odds greater that you would have or could have an influx of water or liquids?

MR. FROST: Objection to form.

THE WITNESS: I mean, fluids will preferentially follow pathways, such as faults and fractures potentially, yeah. But, again, it depends on a lot of variables. Yeah.

BY MR. BURNS:

Q Okay. I think that moves number 3.

And just so I'm sure, was there anything in particular about Exhibit 6 there that impacted or informed your opinions?

A Well, again, it's the finding the location of the Hammondsville mine with regard to

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the details of the map.

Q Okay.

A And moving from there.

Q Thank you.

I'm now going to hand you Exhibit No. 7, and take No. 6.

(Webb Exhibit No. 7 was marked for identification.)

THE WITNESS: It would help if I had north up. (Peruses document.)

BY MR. BURNS:

Q Ready?

A Oh. Yes, sorry.

Q No, no problem.

A I can look at it all day.

Q So does -- Dr. Webb, does Exhibit No. 7 correspond to the fourth item on your supplemental list of materials, Ratcliffe, 2000, bedrock geologic map of the Chester quadrangle, Windsor County, Vermont?

A Yes.

Q And was there an associated report?

A I -- I don't recall offhand on this one.

Q With respect to this map, what was your -- when did you obtain it?

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A Again, it would have been at the same time.
Q And what was your purpose in obtaining it?
A Oh, again, just -- I mean, I was just sort of gathering the quadrangle maps for the region in general. This one, I do not believe we see any of the -- the different talc mines, but I think this is the southern -- sorry, the more southern half of the -- the Chester dome.
Q I see. So none of the J&J talc mines are represented on that map?
A No. I don't believe so, but I'd have to -- can I confer with my report map for a moment? Oh, this is not the colored one.
MR. FROST: Do you want a color -- I'm just showing her a color copy of the same page.
THE WITNESS: Yeah, so this is -- yes, this is the southern half of the Chester dome, and, no, none of the mines are located in the map area here.
BY MR. BURNS:
Q Okay. All right. Let's go to Exhibit No. 8.
And this is going to be 8A and B.

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(Webb Exhibit No. 8A and 8B were marked for identification.)
BY MR. BURNS:
Q Dr. Webb, do Exhibits 8A and B relate to the fifth entry on your supplemental list of materials, Ratcliffe and Armstrong, 2001, bedrock geologic map of the Saxtons River in Windham and Windsor Counties, Vermont?
A Yes.
Q Okay. And was there an associated report?
A Again, I don't remember specifically for -- for this one. I'd have to look at the website or my files.
Q And did you obtain these maps at roughly the same time as you obtained the preceding maps?
A Yes.
Q And were these maps again generally used to plot the location of the mines and -- and your inquiry into them?
A Yeah. Again, this -- this one is sort of the southwestern end of the -- the Chester dome. So I recognize this -- this lobe. None of the mines are in this specific map area.
Q Okay. All right. We can take that map from you.
MR. BURNS: Can we mark that as Exhibit 9.
MR. FROST: This is what, Zodac?
MR. BURNS: Yeah.
(Webb Exhibit No. 9 was marked for identification.)
BY MR. BURNS:
Q Dr. Webb, I've handed you Exhibit 9, which I believe corresponds to number 6 on your supplemental list, Zodac, P., 1940, a talc quarry near Chester, Vermont; is that correct?
A That's correct.
Q And it's published in Rocks & Minerals; is that right?
A Yes.
Q How, if at all, did this article inform your opinions?
A I looked at this after I had written my report, so it's -- it's not reflected in my report.
Q Did it change your opinions at all?
A No.
Q Have any impact?
A No.

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Q When did you first read this?
A Three weeks ago or so.
Q So early March?
A Yes. That's about right.
Q Okay. Did you -- did you find this article yourself or was it provided to you?
A I found it myself.
Q Okay. And why were you looking for it?
A Because I was reviewing the literature, again just in general preparation, and I came across this article cited in -- I believe it was Van Gosen, 2004, and I just thought I should -- I realized I hadn't seen it and I thought I should look.
Q And when you say you were reviewing the literature, the literature with respect to what?
A I mean just the things that are -- I've cited in my report or in the reliance list, but just -- there's so much information that I -- to keep nimble, just to kind of constantly trying to review and -- and remember.
Q When you were reviewing the literature, did you come across any studies or reports or articles that were contrary to your opinions expressed in your report?

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A No, not really. I mean, I -- I -- as I said, I spent some time looking in -- in detail -- well, a wide variety of literature, and for example, that included Van Gosen, et al., 2004, and -- and the 2006 articles that I cited in -- in my report. Some of those are summary articles, and so I really tried to go in and look at the primary literature, not to rely on -- on someone's summary.

But, you know, the Van Gosen, 2006, seemed relevant to follow up on the details of the citations, because in there -- in that report he published a map of asbestos localities in Vermont.

Q Now, you mentioned primary literature. What do you mean by that?

A I mean that I -- so, for example, the Van Gosen, 2006, map and digital supplements, what Van Gosen put on the map in terms of the localities where asbestos was presumably reported were not his first order observations. He had a citation list of the -- the people who made -- you know, presumably said that there was asbestos there. And -- and so I -- you know, I drilled down into that literature to try and see what information was in those articles, if I could

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verify basically the locations that he had shown on his map and understand their relationship to the -- the talc mines.

Q Were you able to verify those locations?

A Well, I was able to look at the literature that he cited, but in some cases, the -- the articles that he cited as reporting asbestos actually cited another article, and when I went to follow that trail, there was nothing in there in terms of a detailed locality. So I actually found that there were several dead ends.

Q Did that cause you to discount Van Gosen?

A Well, I mean, yeah, it gives me pause if -- because obviously there are big implications when you publish a map and say there's asbestos here, here, here and here, that if I couldn't verify the -- you know, the citations that were the basis of -- of that map, that -- that's, yeah, an issue, I think.

Q Now, when you say "big implications," what do you mean?

A Well, property values for people. I mean, obviously if -- I know that's been an issue up around Mount Belvidere, et cetera, but, you

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know, also the health implications for the people locally. So, I mean, you know, that -- it's the kind of thing that I think you want to be pretty certain about if you make that claim.

Q Do you know whether Van Gosen was -- felt pretty certain about it?

A I have no idea. I mean, I imagine, if he put that out there, but I don't know.

Q Were you ever provided details about the years in which the J&J mines were in operation?

MR. FROST: Objection to form.

THE WITNESS: I mean, I think I have a general sense from the sum of what I've read, which includes, you know, testimony in depositions, but -- I have an idea, but it -- you know, it wasn't -- the exact years weren't really critical for what I was doing.

BY MR. BURNS:

Q Were you ever informed that J&J sourced talc from the Johnson mine?

A No.

MR. FROST: Objection to form, belatedly.

THE WITNESS: I mean, not for cosmetic purposes.

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BY MR. BURNS:

Q Were you provided any information whatsoever on the Johnson mine?

MR. FROST: Objection to form.

THE WITNESS: No.

Well, I will say that -- actually correct one thing, in the sense that I saw a reference to it in the plaintiffs' reports and a citation for a Seymour thesis. So I did ask -- I wasn't able to access that thesis, so I asked counsel to provide that, if possible.

BY MR. BURNS:

Q And were you provided it?

A Yes.

Q Did you review it?

A I had a look at it. But, you know, the Johnson mine is so far up north and in a different portion of the belt that it -- it didn't really factor into my opinion.

And even though it makes reference I think to the Hammondsville mine, I -- I wasn't -- I don't know. A master's thesis isn't -- that makes peripheral reference isn't what I'm going to consider as like the key piece of information that my report would hinge on.

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Q Is it your opinion then that the areas of the Johnson mine and the Hammondsville mine are geologically distinct then?
A Yes.
Q Now, in your supplemental materials that were provided last night, right before the maps in Exhibit 3, there is a spreadsheet for the Pooley report in Vermont.
A Yes.
Q And can you tell me what's reflected here?
A So when I reviewed the Pooley report, I created this table to basically write notes about his descriptions of the mineralogy, whether the mineral was a major or minor component of the rock or an accessory mineral, and -- and the different textures that were either described or present in the photomicrographs.
Q So these are your notes on the Pooley report?
A Yes.
MR. FROST: Objection to form.
THE WITNESS: I mean, it was a way -- a way to sort of organize the -- the data, yeah.
BY MR. BURNS:

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Q When did you make these notes?
A Oh, I'd say in January probably.
Q And that's 2019?
A Yes. Yeah.
Q Okay.
A Well, actually, I'll take that back. The Pooley report would have been sometime earlier for Vermont, but the -- the Italian -- there was a table for the Italian.
Q So you have another table for the Italian mine?
A It's the same form, yeah. Basically, yeah.
MR. BURNS: Jack, if you can find that.
MR. FROST: We'll take a look, and we'll figure out if it's in there or not.
THE WITNESS: Yeah, it would have been a second tab in the Excel file, I think.
MR. FROST: Yeah, we'll take a look. We'll get back to you after a break.
MR. BURNS: Sure.
BY MR. BURNS:
Q What use did you put to this table? How did you use it, if at all?
A Well, sometimes -- I mean, I -- as I'm

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reading something, I make notes like this to just sort of help process the -- the information. So -- and it gave me a quick way to refer -- if I wanted to refer back to his report to check on something, this gave me sort of a quick way to navigate to, say, a particular sample, et cetera.
Q Did you try to be as thorough as possible in -- in recording the information from his report?
MR. FROST: Objection to form.
THE WITNESS: Yeah, I mean I -- I worked -- as I read the results or the descriptions of a particular sample, I -- I made these notes. So -- I certainly wouldn't be motivated to have it be inaccurate, but --
BY MR. BURNS:
Q Okay. And your recollection of the Italian spreadsheet or form, can you talk about that a little bit. Were you doing the same thing?
A It's the same thing in terms of headings across the top would relate to the samples that he had petrographic descriptions for. And then the -- sorry, and then in the first column would be the -- the list of the different minerals that were mentioned. And so it would be

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the same format with the major, minor, accessory, and any notes related to the -- the textures observed.
Q Now, you prepared this before your original report?
A Yeah, the -- the Pooley report from Vermont is actually the -- the first document I ever saw, and it was prior to when I was retained. So this -- it would -- yeah, the first time I saw this report would be back in probably May of 2017. I think I made the table during that summer, but...
Q Okay. And with respect to the Italian report?
A Again, I think -- I think I saw that -- that prior to this litigation, but that table I created -- I rereviewed the report, I think, as I said, in January and created that table at that time.
Q And that's the Italian table, just to be clear?
A Yes.
Q So the Pooley report for Vermont, you reviewed sometime summer of 2017?
A Yes.

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Q And created this table?
A (The witness nods.)
Q Now, preceding that, there are graphical representations that look pretty similar to some of the things in your report.
Can you tell us what the two preceding pages encompass?
A Yeah, so there's -- yeah. It's basically this was an early version of the -- the table that shows up in -- in my report. There's some places where I just had some other notes that I -- that I jotted down.
So -- yeah, it's a bigger spreadsheet, so it shows this -- it would be continuous in my Excel file, but it shows up on multiple pages here.
Q I see. So --
A So page 1 would be the first column that would line up with page 2, and --
Q Okay. So the first column would be --
A The mineral name.
Q -- mineral and talc, and then the second column would be formula. Correct?
A Correct, yes.
Q Okay. And what is the next page then?

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A That would be the final column. So just for quick reference, if I had -- I often had the mineral table up when I was reading stuff to -- just to be able to refer to quickly, and also so then I pasted in a picture -- again, this is I think the same image that's ultimately produced in -- in my report about the -- the amphibole structure.
There is a column on, yeah, the Fe sites, so the M2, M4, M -- or whatever number, all refer to specific lattice sites, and you can see them in the image that adjoins that.
Q Mm-hmm.
A But the question being where -- where does iron live in the mineral lattice in -- in different amphiboles.
Q I see.
A "Live" not being a great word for that, but where does it reside typically.
Q Flipping past the maps, there are a couple of retention letters, one by Tucker Ellis, one by Shook Hardy & Bacon; is that right?
A Yes.
Q And you were retained by Tucker Ellis in October of 2018?

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A Yes.
Q And was that for purposes of the MDL?
A That was prior to being brought into this.
Q Prior to being brought into this case?
A Yes.
Q I see. Were you retained generally or was it for a specific litigation?
A I was retained generally. My understanding is there was sort of a -- a reorganization, and I have no idea how this works, but -- of who deals with --
MR. FROST: I was going to say, I'd instruct you not to talk about what any of the lawyers --
THE WITNESS: Oh, okay.
MR. FROST: -- have told you about, you know, but --
THE WITNESS: I was asked to sign a new retainer in October because of something that, I don't know, was reorganized in the structure of things, and so I signed a new retainer with Tucker & Ellis.
BY MR. BURNS:
Q So Tucker Ellis replaces the Shook Hardy

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retainer.
A It does, yes.
Q And the Shook Hardy retainer, which was signed back in June of 2017, was that for a particular piece of litigation or generally?
A No, that was just general consulting.
Q Okay. And your fee there was $250 an hour; is that right?
A Yes.
Q And with respect to the Tucker Ellis retention, it increased to $458 an hour; is that right?
A Yes.
Q And why is that?
A Well, the -- for one, I had a -- I think a better understanding of -- there was more expertise on this topic at the time of the re-signing, plus it was looking forward to -- I mean, looking ahead to work like this. And so in my, you know, prior work, I was -- well, there's a different level of intensity and commitment and inconvenience now, and so the price went up.
Q I'm sure that everyone on both sides of this table can relate.
Now, following that are I think invoices

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that you sent to Tucker Ellis; is that correct? Three of them?
A Sorry, following that, is that -- yes.
Q And the details of those invoices are redacted; is that right?
A Apparent- -- yes.
Q Okay. Do you recall whether the redacted portions -- I'm not going to ask you what they say -- but do you recall whether they reflected communications with your counsel?
A There was some of that in there.
Q Okay. Was there other noncommunication-related detail around your work?
MR. FROST: Objection to form.
THE WITNESS: Noncommunication-related, you said?
BY MR. BURNS:
Q Yes.
A Yes.
MR. BURNS: And we would ask, Mr. Frost, that y'all review those redactions to determine whether there are any pieces that can be produced.
MR. FROST: I'll take it under advisement.
BY MR. BURNS:

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Q Okay. Well, I'll put this back up because we've hit something of a milestone, Dr. Webb, and I think we've largely exhausted most of the portions of the subpoena. So we can check that off, and we'll go to your qualifications.
MR. BURNS: Given where we're at, it might make sense to take a break.
MR. FROST: I was going to say we can take a break now. I don't know what your plan is for lunch. I don't know how long the qualifications is going to take. You know, I would say if it's going to take a half hour, you might want to do that, and then break for lunch. If you think it's going take a little longer, we can, you know --
MR. BURNS: Yeah, it might.
MR. FROST: -- take a really short break now, and then maybe break for lunch at 1:00.
MR. BURNS: Yeah, that's fine. Why don't we take --
MR. FROST: Maybe you may want to take a short break, and then --
MR. BURNS: Sure.
MR. FROST: -- we'll make it through this area.

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THE VIDEOGRAPHER: Going off the record at 11:41 a.m.
(Recess.)
THE VIDEOGRAPHER: We are back on the record at 11:58 a.m.
BY MR. BURNS:
Q Welcome back, Dr. Webb.
So, Dr. Webb, we're going to start going through your qualifications, your background and experience. It's the next step on our journey.
In the supplemental materials you -- your counsel provided last night, there is a CV or resume on -- let's see -- it's right past the supplemental list.
A Okay.
Q Now, is this your current CV?
A I believe so. I haven't checked what's in here, but I did send them an -- an updated CV that was included.
Q Okay. Now, I take it you graduated high school in 1990?
A 1989.
Q Oh, '89. All right. Well, we're only a year apart. But you got your Bachelor of Science in geology at UCLA; is that right?

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A Yes.
Q And from there you went to Stanford?
A Correct.
Q And in 1999, you received your Ph.D. doctoral degree in geological and environmental sciences; is that right?
A That's correct.
Q Now, did you have a specific area of emphasis in your doctoral work?
A Well, there were two main projects thematically, but they basically involved development of the same areas of expertise, and that is petrology and, more specifically, metamorphic petrology being a focus of my work: The study of rock structures or rock deformation and its relationship to metamorphism; and then also the radio- -- excuse me -- the radiometric dating of minerals to then understand the -- the timing of metamorphism and deformation.
Q All right. Can you describe what radiometric dating of minerals involves.
A Yeah. So for many elements, there are different isotopes, which differ in the number of neutrons in the atom. Some of these are radioactive, so in particular, my -- the technique

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we do in my laboratory is -- is fundamentally based on the decay of potassium 40 -- that's the isotope number -- to argon 40.

And so -- but we do a variation on that that I can describe if you want. But basically, we analyze the -- the isotope ratios of the radioactive parent and the daughter product to determine an absolute age.

Q And by "absolute age," what do you mean?

A That would be, say, to say -- calculate an age of like 544 million years rather than generally referring back to the Cambrian or something like that. So...

Q I see. So in layman's terms, if I could hand you a rock, theoretically you could take it back to your laboratory and date it through that process?

A Yeah, as long as -- in my case, as long as there are potassium-bearing minerals.

Q I see. And do those attend certain types of rocks?

A Yes. It's all a function of the bulk composition of -- of the rock. But, yeah, certain -- certain rocks you can -- are pretty much guaranteed you can find these potassium-

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bearing minerals in, yeah.

Q I see. Are there certain rocks that are on the other end of that equation where you can assume that you don't have those potassium-bearing mineral -- minerals?

A Yes.

Q What types of rocks are those? Do you have some examples?

A Well, so rocks that don't have significant potassium in them, like the ultramafic rocks, for example, or a quartzite or a marble or -- I mean, sometimes we can do a whole rock analysis. But, yeah, I mean, the -- the -- generally the mineral -- mineralogy is a function of the bulk composition among the other variables of metamorphism.

Q I see. So with respect to talc then, it's fair to assume that you're not ordinarily using rocks containing talc mineral -- minerals in your dating process. Is that fair?

A Well, there -- there may be the possibility of that, but -- again, it just depends on the bulk composition of the -- of the rock and the -- and the history.

But, you know, pure -- like these talc

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ores of pure talc and magnesites, they would not be the ideal targets for that.

Q I see. During your doctoral work at Stanford, did you perform any studies or -- or let me leave it there.

Did you perform any studies that involved talc as a mineral?

A There was talc present in -- in some rocks, yes.

Q But did you -- were you focused on the talc itself or focused on some other aspect of the rock?

A Well, I was focused on -- I mean, again, the same basic principles, understanding the mineralogy and the textures in different rocks, the relationship of that as deformation, and then, again, based on the -- the thematic problems I was working on, you know, finding other targets for -- for dating. So it wasn't basically focused on -- on talc itself, but...

Q Did you do any work that was specifically focused on asbestos?

A No.

Q Now, your doctoral dissertation was in exhumation of high and ultra high pressure rocks

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in the Qinling-Dabie --

A Qinling, yeah.

Q -- Qinling-Dabie -- is it Dabie or --

A Dobby (phonetic).

Q Dobby (phonetic).

-- Qinling-Dabie orogen?

A Yes.

Q Eastern China and --

A The Yagan-Onch Hayrhan metamorphic core complex.

Q All right. And we are going to have to spell this --

MR. FROST: I was going to say, we'll get you a list.

BY MR. BURNS:

Q Can you describe generally what this dissertation was about?

A Yeah. So those -- those are actually two projects in that -- that title. So the "Exhumation of high and ultra high pressure rocks in the Qinling-Dabie Orogen," so there we had basically a continental collision that occurred at the end of the Permian, early Triassic, and you had the leading edge of the continental margin went down a subduction zone, down to mantle

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depths, like 90, 100 or more kilometers depth, and somehow those rocks came back to the surface. And so in some of those rocks, little bits of carbon turned into microdiamonds and quartz turned into coesite, a high-pressure polymorph, as a function of having reached those high pressures, and somehow they were brought back to the surface.

And so when I was in my Ph.D., this was early after the first reports of these ultra high pressure rocks at the surface, so we went to the Qinling-Dabie Orogen, which was one of the largest orogenic belts where this was recorded, to try and again document the different metamorphic assemblages, their relationship to different fabrics that would form during deformation, during exhumation, and also to try and date the timing of when did the rocks first reach those depths and how, and how fast did they come back to the surface.

So it's really an integrative piece of metamorphic petrology, structural geology, and again the radiometric dating.

Q Did you figure out how they came back up?

A Yeah.

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Q How was it?

A Plates reorganize and the subduction zone got reactivated as a normal fault system. And so basically, because South China started moving, relative to today's geographic coordinates started moving south again, it basically pulled that continental margin out of the subduction zone.

Q Okay. Now, when you mentioned going to the Qinling-Dabie Orogen, did you physically visit the site?

A Yes.

Q And what did you do while you were on site?

A We found outcrops where we observed the metamorphic -- again, metamorphic rock types, and really there, in particular, documenting the structures and taking sample -- oriented samples to then bring back and make thin sections, and look at the petrography and also choose select samples for dating.

Q So once you brought those samples back and did the thin sections, you were able to look at the structure of the -- of the rock. Is that fair?

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A Yeah. Well, that -- in the thin section, look at the microstructure and integrate that back into the outcrop and regional scale.

Q And you were also able to date the rocks; is that right?

A Yes.

Q Okay. Now, after you received your Ph.D., it looks like you went to the University of Geneva in Switzerland; is that right?

A That's correct, yes.

Q And what did you do there?

A I -- well, I worked in the -- the argon -- so this is the same type of lab that I have here at UVM, but the argon laboratory, and -- pardon me.

Q That's okay.

A There I was working with igneous petrologists, and so we were dating some samples from the -- the Andes.

Q And from there you went to Syracuse University; is that right?

A That's correct.

Q And you, it looks like, worked in both the noble gas isotropic research as a research laboratory manager and as an assistant professor?

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A Yes.

Q Okay. And what was the focus of your work while you were at Syracuse?

A Well, when I first arrived, the lab was an empty room, so I actually helped build and commission the laboratory. And then we turned our attention to different projects. A big focus of my research there was on Papua, New Guinea.

Q And the rocks in Papua -- Papua, New Guinea?

A Yes.

Q I see. What exactly is a noble gas isotopic research?

A So argon, neon, helium, they're all noble gases. They have filled outer electron shells, so they don't bond with other elements.

Q I see. Just like kings, they don't play well with others, right?

A Yeah, they don't need anybody else.

Q And from Syracuse, you went to the University of Vermont; is that right?

A Yes.

Q Okay. And that was in 2009?

A I started here in the fall of 2008.

Q Okay. And you are still at the

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University of Vermont; is that right?
A That's correct.
Q And are you an associate professor today?
A I am, yes.
Q Has there been any particular focus to your work here at -- in Vermont?
A Again, general themes of integrating metamorphic petrology and structural geology and -- and age dating. I've worked in Papua, New Guinea, I've worked in Mongolia, and I've been working a lot in -- in Vermont.
Q When did your work in Vermont begin?
A Pretty much upon my arrival.
Q Mm-hmm. And what has been your focus there? Is there a particular area, geographic or otherwise?
A It varies. I mean, I guess the Chester dome area is the farthest south, and then I've worked in the Tillotson Peak complex, so that's a -- in the northern part. I mean, generally kind of in the Green Mountains generally, but also in the Lake Champlain basin.
Q And what have you been trying to do in the Green Mountains? Is there an overarching

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theme to your work there?
A Well, it -- it depends. Again, there's a very complex geologic and tectonic history. You know, we have these very beautiful, detailed geologic maps, but there's a lot of room for refinement in some of the ages of events, and particularly looking at the -- the reactivation of structures that formed earlier in the history. So you might have a fault that's formed during the tectonic orogeny that a hundred million laters -- million years later, another continental block comes and then slams into North America, and that fault moves again.
But, again, being able to look at the microstructure and choose targets for dating to resolve those different events.
Q Now, you mentioned you had worked out at the Chester dome. What have you -- what has been your experience out there?
A I have a master's student currently working on the -- the eastern margin of the -- the dome, and also the southern portions, which technically some people call the Athens dome. But we're basically trying to refine the timing of the formation of that shear zone, the one I described

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that resulted in vertical thinning and the juxtaposition of the rocks at different metamorphic grades.
Q Are there differences between the eastern margin and the western margin?
A We've looked at some over there. Our -- the -- I mean, this is the beginning of that sort of investigation. But the reason I mentioned the eastern margin specifically is because there, there happen to be roads that cross good exposures of rock types where you can do a sampling transect from the core through the attenuated mantle unit. So it's more about the opportunity -- the sampling opportunities there.
Q Roads have been cut through that?
A Right. You might -- well, it's not very green here now, but -- the -- the foliage poses some challenges at times, yeah.
Q And what have you done on the southern -- on the Athens dome region or that southern region?
A Again, just in particular, some very good outcrops there that allow for some more detailed study.
Q Have you reached any conclusions or

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dating?
A No, this is -- we're in -- in progress right now.
Q I see. And we've used the term "dome" a lot. Can you describe for the record what a dome is?
A Yeah. So, again, it relates to folding of the rocks. So, you know, there are layers of -- of rocks, say, and tectonic forces cause folding. And so the Chester dome is -- well, again, there's multiple events that have done this. There was first sort of intense north-south stretching, and then the Acadian orogeny resulted in this sort of east-west folding. So that's partly how -- why we have this long north-south structure. So...
Q Now, on the second page of your CV, there's an area for Technical Expertise.
A Mm-hmm.
Q The first entry there refers to Nu Noblesse, MAP 216 and Micromass 5400 noble gas mass spectrometers for argon 40 and argon 39 thermochronology.
And again, are those tests or processes to date rock?

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A Yes.
Q And I take it those are specific tests you would -- and those are the processes you enlisted, right?
A I'm sorry?
Q Are those specific testing devices or testing processes, rather, that you would use?
A Yeah. These are magnetic sector, mass spectrometers, so that's -- yeah, how we're doing the isotopic analyses.
Q Okay. Next one is Balzers Prisma QME 200, and that's another mass spectrometer?
A Yes, that's a quadrupole mass spectrometer, so -- as opposed to taking up one of these large tables, it's more of a football-shaped item, but that is used, yes, specifically for that uranium-thorium-helium dating technique.
Q Okay. Next is design, construction and maintenance of ultra-high vacuum extraction lines.
A Yes.
Q What does that involve?
A That's the front end to my mass spectrometer. So there's actually argon in the air we're breathing right now, and so we have to -- we've built this stainless steel line that

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is -- inside that envelope, stainless steel envelope, pressures are about 13 orders of magnitude lower than the pressure we're enjoying today, because we have to get all that background argon out of the system in order to be able to measure precisely what comes out of our samples.
Q Then you list management of radioactive materials and isotopic inventories. Is that primarily argon?
A Yes. In order to get to this argon 40, 39, from that potassium-argon technique, we actually have to irradiate our samples with fast neutrons and a reactor.
Q I see. Is that done under controlled conditions of --
A Yeah, I mean, I'm not involved with the -- the nuclear reactor. That's a service that's provided to us, yeah.
Q Yep. Other analytical experience, you have electron microprobe analyses. What does that involve?
A So basically that's a scanning electron microscope that has WDS protectors that are higher -- generally higher precision detectors than the EDS or EDAX.

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Q And what are those used for?
A For detailed elemental analyses. So you might want to look at the chemical zoning in minerals. You might want to measure absolute concentrations of different elements, because we can then use that information to do thermobarometry to determine the -- again, the pressures and temperatures of -- of the formation of a mineral that that records.
Q Okay. The next one is secondary ionization mass spectrometry.
A Yes.
Q What does that involve?
A So that's a different type of mass spectrometer where you basically ablate a sample with an ion beam. That ion beam basically drills a hole and ionizes material.
So this is in situ work. So you might be making a 10 micron spot within a zircon grain, and then -- then those ionized atoms -- or they're ions at that point -- are analyzed, say, for uranium-lead isotopes.
So it can be used for, again, radiometric dating or I've also used it for a technique related to the -- titanium concentration

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in quartz. Again, a thermometer or barometer-type technique.
Q Have you ever used a scanning electron microscope to identify particular minerals?
A Yes.
Q What type of minerals?
A I mean, it depends on what's -- what's on the menu in your rock, but -- well, the amphophiles, garnet, muscovite, biotite. Yeah, I mean --
Q Okay. Next one, laser ablation inductively coupled mass spectrometry.
A Yes.
Q That's a mouthful.
A Yeah. So that one you -- again, it's a mass spectrometer, a magnetic sector mass spectrometer, but in this case the -- the liberation of atoms from the sample is done generally with an excimer laser, so that's in the UV range of the spectrum. So very short wavelength, high energy laser that, again, can drill a spot into -- a 10, 15, 20 micron spot into a mineral grain so you can actually date different zones in minerals. So that -- that's used for uranium-lead dating of zircon, for example.

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Q And the last one, just to make sure we get them all, cathodoluminescence imaging?
A Yeah. So that's again using a scanning electron microscope, but a cathodoluminescence detector basically -- well, you can see different things. Again, that was part what I used for the titanium and quartz. So if you were looking at quartz with that technique, zones in the mineral that had higher titanium concentrations would show up brighter, for example. So you could identify zoning, and then identify -- use those maps of zones to target where you would drill into either with the ion beam or subsequent analyses.
THE REPORTER: Subsequent what?
THE WITNESS: Analyses, yeah.
BY MR. BURNS:
Q And the next entry in your CV is consulting experience. And you list from 2007 to present the work you've done for law firms for J&J; is that right?
A Yes.
MR. FROST: Objection to form. It's 2017.
MR. BURNS: Yeah, 2000 -- I said '7.
BY MR. BURNS:

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Q 2017 to the present, right?
A Yes.
Q Okay. I almost snuck that one past your counsel, but I failed.
Have you done any other consulting experience for -- in litigation?
A No.
Q Okay. Have you done any other consulting experience for industry?
A No. Not consulting, no.
Q Okay. Do you consider yourself a mineralogist?
A I certainly use mineralogy, so, I mean, there's kind of a spectrum of expertise out there. So I would describe myself as a -- as a petrologist rather than a mineralogist, but I certainly do have some expertise in mineralogy.
Q What's -- what's the difference between those two?
A Well, most typically, if someone describes themselves as a mineralogist, then -- for example, the faculty member in our department, he is an expert in the structures of apatite crystals, and so is looking to determine, yeah, the mineral structure where different elements

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are -- are sited, how they're bonded.
Q Mm-hmm. And how would you contrast that with a petrologist?
A I'm generally looking at rock systems. So rather than -- I mean, I certainly use mineralogy in order to determine what minerals I'm looking at, but then what I'm interested in, after the mineral ID, is understanding the relationships between different minerals. Because you might have different assemblages in a rock that, again, record different parts of that rock's history.
So, yeah, using mineralogy and mineral structures, and again, I also get into the structural geology side, but it's -- it's really trying to understand the -- the formation and the evolution of rocks, but what they record in terms of geologic and tectonic processes.
Q I hand you what we'll mark as Exhibit 10, Dr. Webb.
(Webb Exhibit No. 10 was marked for identification.)
MR. FROST: Thank you.
BY MR. BURNS:
Q Now, is this your bio on the University of Vermont system?

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A It looks like it, yes.
Q Okay. And similar to what we've been discussing, on the back page it lists your areas of expertise and a researcher in tectonics and thermochronology, correct?
A Yes.
Q All right. And under "Teaching Research," there are a couple of things I wanted to understand a little more fully.
First, in the first sentence it says: "I am a field-based geologist."
What is a field-based geologist?
A Well, in that -- in many cases I'm actually out in the field making structural measurements, collecting oriented samples. That kind of depends on the nature of -- of the question that I'm trying to address, but it means that I have a skill set that allows me to do that as needed.
Q And what is that skill set?
A Well, the ability to recognize different rock types in the field, the ability to recognize and document structures, to make the appropriate measurements. For example, the orientation of foliations, or we also have lineations. Minerals

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can be elongated or pebbles can be stretched, for example. All this relates again to the structural evolution of -- of the rocks.

Q All right. Now, in the next paragraph it says you teach courses in geochronology, petrology, microstructural analysis and tectonics.

And then, "In the classroom and in practice, my students and I integrate analytical data with observations at microscopic to continental scales to try and understand how rocks and regions evolve in space and time, and the tectonic processes that shape them."

Did I read that correctly?

A Yes.

Q Okay. Now, when you refer to "integrating analytical data with observations," what -- what are you referring to there?

A Well, it -- it depends on, again, the -- the specific study at hand, but again, I -- in my work, let's say if I want to date a mineral and we -- the mass spectrometer spews out some information that we calculate an age from, that age is only as good as my ability to interpret what it means.

So that means that I have to understand

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the context of the mineral I dated in the rock. I have to understand the context of that rock in an outcrop. I need to understand the context of that outcrop in the -- sort of the map scale.

And so we're integrating the -- the isotopic data. We're integrating the observations of the minerals and the mineral assemblages, and their relationship to deformation, coupled with field measurements.

Again, it depends on the study what -- what all is at play, but also, you know, integrating this with the existing literature out there, which generally drives the nature of the question.

Q Right. And I'm going to assume your field-based skill set assists in that process by allowing you to observe the minerals, rocks in question in the area in which they occur, and juxtaposed against other formations or other rocks or minerals, right?

MR. FROST: Objection to form.

THE WITNESS: Yeah, in part. But again -- yeah, I'm sorry, I think I lost the thread there. It was a long one.

BY MR. BURNS:

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Q No, fair enough. And really I'm just saying that you described a pretty unique, I think, field-based skill set, one that maybe I wish I had. I would love to be able to look at a hillside and -- and take an instant view of the rocks there and how they fit into the structure.

But what I was getting at is those field-based skills allow you to put the rock or mineral you're examining into that context, the context that's found in the field; is that right?

A Yes. I mean, it's also a skill set that allows me to work with others. So a lot of the analyses done in my lab are people who have brought samples to us, and so in those cases, I'm generating ages for them, but need to be heavily involved in helping them interpret it.

So that field-based skill set also allows me to ask them the appropriate questions to get at that interpretation or give them advice in advance about sampling strategies they might want to employ.

Q Okay. In your professional career, have you ever conducted any research on -- aside from the litigation context, on talc as a mineral?

A Not specifically focused on it, no.

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Q And same question with respect to asbestos.

A No.

Q Okay. How does a petrologist differ from a geologist?

A Well, there are geologists who are entirely focused on the fossil record or they might be really an expert in a certain kind of structural geology. So geology is more broad about, you know, the study of the earth and -- and rocks, whereas petrology, again, is really looking at the mineral assemblages and the mineral textures to get at how did that rock initially form and what are the processes that's altered it since its formation.

Q So you're not a professional geologist, I would assume.

A How do you define "professional geologist"?

Q Or a geologist generally.

A Oh, I'm definitely a geologist.

Q Okay. So the greater subsumes the lesser or the smaller.

A Petrology is a specific -- more specific area of geology.

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Q Of geology. Okay. Bad question. I appreciate it.
A Well, I -- yeah.
Q Have you ever published any peer-reviewed articles on asbestiform amphophiles in talc?
A No.
Q Have you ever presented on that topic in any capacity?
A No.
Q Have you ever published any peer-reviewed articles on the methodological approaches for the identification of asbestiform amphiboles in talc?
A No.
Q Have you ever presented on that topic?
A No.
Q Have you ever -- in the context of -- in the journal context, have you ever served as a reviewer?
A Yes.
Q Okay. Have you ever reviewed any articles or other materials on any issues involving asbestos in talc?
A Not asbestos specifically. I mean,

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there's been talc in rocks in papers that I've reviewed, but --
Q Okay. Specifically about the talc or --
A No. I mean, you know, again, that's part of an assemblage that's being interpreted in the context of the assemblage, et cetera.
Q Have you conducted any work with graduate students on any issues involving asbestos in talc?
A No.
Q Are you aware of any student thesis or dissertations on any issue involving asbestos in talc?
MR. FROST: Objection to form.
THE WITNESS: Am I --
BY MR. BURNS:
Q Aware.
A Aware?
Q Mm-hmm, generally.
A Yes.
Q Okay. And what's your general awareness?
A Well, I know -- I mean, some of the papers I've cited have come out are first authored by students who worked with Mickey Gunter, for

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example. I'm also aware of the Kerrigan thesis that looked at experiments in which they were seeing if they could grow asbestiform talc. So, yeah.
Q Putting aside the litigation context, have you ever participated in any discussions or fora or conferences involving those topics relating to asbestos in talc?
A No, not specific to them, no.
Q Have -- have you personally ever identified any asbestiform amphibole materials in a talc sample?
A No.
Q Have you ever examined any talc samples for that purpose?
A No, not for that purpose, no.
Q Have you ever examined any talc samples generally?
A Yes.
Q For what purpose?
A General petrology. I mean, if we're talking about rocks with talc in them, then we've seen some of that in the rocks from China and Papua, New Guinea, I think, but also in the petrology collection for teaching, putting

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together labs, et cetera.
Q Okay. Do you plan to offer any opinions in this case regarding the appropriate technique for examining cosmetic talc for the presence of asbestos?
A No.
Q Does your department possess a transmission electron microscope?
A The department does not. There's one in the medical school.
Q What about -- same question for a scanning electron microscope.
A There's one in the -- the medical school, and there's a new one coming this spring. I'm a co-PI on an NSF grant that was funded to allow UVM to purchase an SE/SEM instrument.
Q You said co-PI. What is a PI?
A Co-principal investigator. So there was a lead PI out of the physics department, and then I'm one of, say, five PIs on the grant.
Q I see. Have you ever been involved in research or work designed to investigate the presence of asbestos materials in any geologic formation?
A Not specifically for that purpose, no.

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MR. BURNS: I think we're at a lunch stopping point.
MR. FROST: Yeah, 12:45, sounds about right.
MR. BURNS: All right. Great.
THE VIDEOGRAPHER: Going off the record at 12:41.
(Lunch recess.)
THE VIDEOGRAPHER: We're back on the record at 2:00 p.m.
BY MR. BURNS:
Q Good afternoon, Dr. Webb.
Dr. Webb, we are painfully close to checking off the qualifications box on this -- this little sketch I made.
Just one general question that I was hoping you could describe for us. When you go out into the field to collect samples, what process do you generally do when you go out there? What are you looking for? Can you describe that generally?
A Yeah, I mean, it depends on what's known and documented for the region already. So that -- you usually build off of the existing knowledge base. But -- so usually we're looking for fresh outcrops with 3D exposure so that you can actually

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see something, rather than just a moss-covered rock surface, for example.
Again, to make observations about the -- the rock types, any observations that can made -- be made about the mineralogy in detail, but it depends on the size of the minerals in -- in the rocks. Again, looking to make observations and document structural orientations, again about the planar or linear elements that might be present in a rock as a function of its deformation history.
So, I mean, those are -- are generally the -- the sort of categories of -- of observations, yeah.
Q Now, when you take the specimen, how do you physically do that? Are you chipping off a specimen? Are you picking it up off the ground? I guess it really depends.
A I don't usually rely on things that are on the ground, because you can't. I've left plenty of rocks places where they didn't originate from.
So -- so usually it's a hammer and chisel, and most often I'm working with oriented samples. So we would measure a feature and mark it in the field, and that way we can reorient it

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in the lab and, say, make -- cut the rock relative to a specific orientations.
Q And by orientations, are you referring to sort of how it was oriented in the ground before you took it so that you know where north, south, you know, up, down is?
A Uh, yeah, it depends. I mean, you know, so if -- if this is a rock and these pages are a planar fabric in the rock, the foliation will often cut perpendicular to the foliation so that you see the --
Q The layers.
A -- the layering rather than just looking at one plane in the rock. If there is a lineation, that usually relates to the deformations, so the transport direction of one piece of rock relative to a lower piece. And often we'll -- if that's present, we'll cut perpend- -- sorry, parallel to that, because that's how we would observe the rotation of minerals that might tell us the way the fault was moving. Or --
Q Okay. Thank you.
Now, you mentioned you would look for fresh outcrops or 3D exposure. What do -- what do

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you mean by 3D exposure?
A Well, again, it's this idea that in order to make these -- what we would call kinematic observations relate -- how things are rotating, you need a rock exposure that allows you to look at an exposure that's perpendicular to the foliation and parallel to the lineation.
In other words, you could -- if something was rolling like that (demonstrative), you could --
Q Yeah.
A -- you could see that as opposed to it coming down the barrel at you. So that 3D aspect is important for getting those certain perspectives at times.
Q What type of sites do you look at or look for to find that, you know, fresh outcrops or 3D exposure? You had mentioned a road before.
A Yeah, so road cuts are -- are often our best window into the rocks, or perhaps in rivers. You know, yeah, I've certainly been in quarries before, et cetera, but --
Q Mines?
A If they're aboveground, I mean, yeah. I've never been in an underground mine.

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Q Okay. Now, once you take the actual sample, I assume that you are taking it back to the lab to perform certain tests or examinations upon it. Right?
A Yes. Usually we take it back to the -- to the department, and there is a rock-cutting facility, so we'll cut those oriented chips out of the rock to send away to have thin sections made, petrographic thin sections.
Q And then what do you do with the petrographic thin sections?
A I look at them under a petrographic microscope, polarized light microscope, to make mineral identification, to observe the textural relationships between minerals. That, again, might relate to relative ages or metamorphic reactions that might be frozen or captured in a sample, and also the microstructural observations about, say, shear sense. As I said, the vorticity or the rotation of -- of minerals that might tell us about the type of faulting or deformation that was occurring. And then in the case of the geochronology, selecting appropriate rocks to target for dating.
Q And that's really been the focus of your

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particular research is ultimately getting to that last point, the dating of those rocks, right?
A Not exclusively, no.
Q How not exclusively?
A Because I've had some projects where there's been no geochronology, and it's been more about the petrology, again understanding the temperature and pressure conditions. So, again, it just depends on what's known already and what the new questions are.
Q I see. And I take it during those steps of the micro- -- pardon me.
During those steps in the lab, you are carefully recording each of these observations; is that right?
A Yeah. I mean, again, it depends on what the -- the nature of the project is. But, yes, we make a record of the -- the mineralogy, the structures, et cetera, yeah.
Q How do you make a record of where the rock was sourced?
A Generally, we take GPS coordinates associated with the sampling locations.
Q Well, I think we can safely cross qualifications off our list.

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And that will take us to the efforts you made in preparing to give your opinions in this case. And I'm going to get to those specific opinions a little bit later, hopefully not too much later, recognizing it is the afternoon.
What was your charge in this case? What were you asked to do?
A I was asked to study and -- and provide an explanation of the petrological processes that are associated with the high purity talc deposits. So, again, you know, these pressure, temperature, bulk composition type questions.
Of course, a specific question I was asked to address is what is the relationship or not of -- of asbestos to -- to the talc deposits at issue. Yeah.
Oh, as well, and part of that charge, of course, was to read and respond to the -- the reports of Drs. Cook and Krekeler. And also if there was information that I had or was able to synthesize on -- on, again, sort of at the mineral structure scale. The differences, for example, in the chemical resistance or the -- of, say, asbestiform amphiboles versus non-asbestiform amphiboles.

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Q Mm-hmm. Can you describe in general terms the methodology you employed in reaching and rendering your opinions in this case?
A Yeah. So, I mean, I -- I really used the same approach that I would approach any aspect of my science, whether it's writing a paper or a peer review. But, again, to try and do an extensive search of the peer-reviewed literature, and also -- I mean, in that search I found also USGS reports, as we've discussed earlier today. And really to look in -- in detail, and, again, I mentioned that I tried to really dig into the primary citations, who were the first people to look at these rocks, what did -- you know, what did they see, and try and confirm things that had -- were then included in -- in later summary type papers that I also saw.
But, again, what I'm really concerned is as a petrologist is the system of rocks, and so, you know, not only was my interest related to anything written about the talc bodies themselves but also the surrounding rocks. Because in order to understand the history that the -- the talc ores experienced, you have to dig into rocks around them of different bulk compositions.

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Different rocks have the potential to record different aspects, in part because they might have a different strength or they might have minerals that are more stable over a broader range of pressure and temperature conditions.

So this was all part and parcel in terms of trying to understand, as I was describing, the -- the structure of -- of the dome in the case of Vermont, you know, how differences between the core and those mantling units where the -- the talc mines are -- are located, the details of the pressure, temperature, deformation histories.

So, again, I wasn't only just looking at the talc ores, I was also looking at the reports of asbestos in Vermont and really trying to understand the petrology of those systems. Again, relative timing, pressure, temperature, conditions of formations, differences maybe that in fluid chemistry that might impact how metamorphic processes play out.

So, again, my synthesis was a range of scales from sort of, you know, all of Vermont and its cumulative tectonic history to, you know, reading works that described observations made in petrologic thin sections, you know, again, down at

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the micron scale.

Q Okay. Well, one of the things that surprise me a bit in reading your report, just to be frank, is that the methodology you just -- just described and employed in this case differs from some of the science you have conducted before as a field-based geologist in that you did not apparently go out to, for instance, the Vermont sites and take samples, and bring those samples back to your -- to your laboratory to determine whether asbestos may be contained in the underlying rock, what that relationship might be to the talc.

Is that a fair description of what you did in this case?

MR. FROST: Objection to form.

THE WITNESS: I mean, I think the description of what I did is what I just outlined in the prior question. I mean, it's true I did not sample the -- the talc -- rocks from the talc mines, but again, I mean, as I've been describing, when I go out into the field, those objectives are -- are really driven by what I understand from the -- in this -- like in the case of Vermont, the decades of work of geologists and petrologists

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before me.

So if there -- if I feel like there is a big gap in that information, that would drive that need to go out into the field to collect samples, and I just didn't arrive at that position in this case.

BY MR. BURNS:

Q Well, let me -- let me focus on the Argonaut mine for a moment. Are you aware of any peer-reviewed work or any other reports relating to samples taken in the Argonaut mine relative to talc and asbestos?

A The Argonaut mine. Well, other than, I think it's, the Buzon thesis where there were some samples that were analyzed by, I think it's, Marian Buzon during her Ph.D., I haven't seen anything in -- in the published literature about the samples from that mine except for her work, I believe.

Q So, for example, you spoke about gaps in the record. Why is that not a gap in the record you would be interested in?

A Well, again --

MR. FROST: Objection to form.

THE WITNESS: Again, I mean, basically

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the Vermont talc mines that we're interested in are in a pretty specific zone around mantling that Chester dome, and so bracketing that history are -- is work done -- I mean, really the most detailed study out there is that Sanford 1982 paper, and Sanford sampled from, I think, three different locations in Vermont and also in Massachusetts. But in his study, he had samples from the Newfane mine and the Grafton mine, which basically bracket in PT space the -- the Argonaut, Hamm and Hammondsville mines, and so I was able to look at pretty gory detail in his -- in his paper.

I was able also to compare that with the -- the Pooley study, who sampled different rock types around the mine, which, again, was of interest to me because I like to work with rock systems. And he had detailed petrographic data and descriptions in there, again photomicrographs, the kind of -- the kind of data that I regularly work with.

And basically -- and also there was the Robinson -- or, sorry, the Robinson study from the Frostbite mine. And so, I mean, I feel like these rock bodies are -- are pretty tightly bracketed by these studies, and -- and I felt like I saw the

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information I needed in those works.
BY MR. BURNS:
Q So we're sitting here today in Burlington, Vermont. How far approximately is the Argonaut mine from here?
A Oh, I guess two-and-a-half hours or so.
Q Driving by car?
A Yeah, driving.
Q Okay. And you realize that the -- the allegations in this case center in part on the plaintiffs' allegations that asbestos was a constituent mineral in the rocks that were mined at the Argonaut mine. Is that correct?
MR. FROST: Objection to form.
THE WITNESS: I'm sorry, can you repeat the --
BY MR. BURNS:
Q Sure. Just asking you, you realize that the allegations in this case center in part on claims that asbestos was a constituent of the material that was mined at Argonaut.
A Yeah.
Q Okay. Did you ever ask to go to the Argonaut mine?
A No.

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Q Were you ever told that you couldn't go to the Argonaut mine?
A No.
Q And is that true of the other two J&J mines in Vermont?
MR. FROST: Objection to form.
THE WITNESS: Yeah, I mean Hammondsville is -- is underwater. It's a pond. So -- and I'm not sure about the Hamm. I think, you know, underground mining wouldn't -- or shafts wouldn't be able.
But, yeah, no, I didn't ask to go. I wasn't told that I should go or couldn't go. I was left to use my professional opinion about how that played out.
BY MR. BURNS:
Q I'm going to put up on the screen what I've marked as Plaintiffs' Demonstrative No. 2. I will give you and your counsel a copy of it, though, just so you can follow along.
(Webb Exhibit No. 18 was subsequently marked for identification.)
BY MR. BURNS:
Q I think I have a pretty good

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understanding, although you should correct me if I don't, about this methodology you just described. But I want to make sure that we capture and exclude some -- some areas that I don't think fit into it.
MR. BURNS: Oh, did I -- yeah, those are two pages. Here.
BY MR. BURNS:
Q So I'm just going to ask you some questions, and I will -- I'll mark this so I can remember the answers.
So, Dr. Webb, have you ever worked in a talc mine?
A No.
Q Have you ever designed any talc mine operations?
A No.
Q Have you ever consulted on any talc mine operations?
A No.
Q Have you ever designed any drill core sampling protocols for talc mines?
A No.
Q Have you ever designed a blast hole sampling protocol for a talc mine?

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A No.
Q Have you ever designed an open pit mining operation?
A No.
Q Ever designed an underground mining operation?
A No.
Q Have you ever supervised or consulted on the ongoing operation of a mine?
A No.
Q And I think I -- I think you've answered this, but have you ever visited any of the J&J talc mines in Vermont?
A No.
Q Is that also true of China and Italy?
A That's correct.
Q Have you ever conducted any field observations at any talc mines?
A No.
Q Have you ever conducted any field observations at any of the J&J talc mines?
A No.
Q Have you ever inspected any talc mines?
A No.
Q Or any J&J talc mines?

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A No.
Q Have you ever reviewed any petrographic maps from J&J talc mines?
A What do you mean by "petrographic maps"?
Q Well, similar to some of the maps that you included in your report but specific to in Vermont, Italy or Chinese mines?
A I mean, do you mean geologic maps? Because "petrographic" generally means observations made through a petrographic microscope. So petrographic maps to me would mean a map of a thin section.
Q I see. So that doesn't make a whole hell of a lot of sense.
A No.
Q All right. Fair enough. Well, I tell you what, we will scratch that one.
Have you ever reviewed any geologic map -- maps from a talc mine?
A Yes.
Q And what mine was that?
A There was -- in the Robinson, et al., 2006, report from the Frostbite mine.
Q Mm-hmm. Okay. How about any geologic maps from J&J talc mines?

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A No.
Q Did you ask whether any were available?
A I didn't ask, no.
Q Okay. Ever review any mine planning maps from a talc mine?
A No.
Q Have you ever reviewed drill cores taken from a talc mine?
A No.
Q Have you ever seen the drill cores taken from any of the J&J mines at issue here?
A No.
Q Have you ever reviewed any mine planning maps from the J&J talc mines?
A No.
Q Ever analyzed any thin sections from cores removed from a talc mine?
A No.
Q Same question with respect to J&J talc mines.
A Yeah, no.
Q Have you ever seen the results of any analysis of thin sections from cores removed from a talc mine?
A From cores, no.

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Q Same question with respect to J&J talc mines.
A Yes, that's --
Q Same answer?
A Yeah, yeah.
Q Have you ever inspected any core logs from a talc mine?
A No.
Q Ever inspected any core logs from the J&J talc mines?
A No.
Q Ever asked for any samples of J&J talc from the --
A No.
Q -- products in question?
A No.
Q I'm sorry. And that answer was "no"?
A Yes. Never asked for.
Q Okay. Have you ever taken any samples or rock specimens from a talc mine?
A No.
Q Or from the J&J mines in question?
A No.
Q Have you ever conducted any XRD on any J&J talc?

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A No.
Q What about PLM? We just talked about PLM a few minutes ago. Have you ever done that on any J&J talc?
A No, personally I have not conducted those studies.
Q Are you aware of any outside this litigation?
A Sorry, then we're on -- specifically on J&J talc?
Q Yes.
A And this is the bodies that are being mined for the cosmetic talc?
Q Yes.
A No.
Q Have you ever conducted any scanning electron microscopy on any talc?
A I've seen it, yeah.
Q Seen it, but have you conducted it yourself?
A Well, yes. I mean, again, not on the talc ores that we're -- we're discussing, but I've seen talc in rocks on the SEM while I've been --
Q So in other rocks.
A Yes.

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Q But not with respect to any J&J talc.
A No.
Q Have you ever conducted any transmission electron microscopy on any talc samples?
A No.
Q And that would be true of J&J talc samples?
A That's correct.
Q Have you ever seen test results from samples taken from the J&J talc mines?
A Test -- what kind of test results?
Q Test results with respect to asbestos or other contaminants.
A No.
Q Have you ever designed or supervised a beneficiation process for talc ore?
A No.
Q Have you ever published on talc deposits used to source J&J talc in Italy, Vermont or China?
A No.
Q And I think you answered this earlier, you've never published on asbestiform amphiboles in talc, have you?
A No.

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Q And is that also true of asbestiform serpentines?
A No -- I mean, you're correct, and the answer is no.
Q Have you ever published on methodological approaches to differentiate asbestiform amphiboles and non-amphibole minerals in talc?
A No.
Q And have you ever personally identified any asbestiform amphiboles in talc?
A No.
Q All right. Thank you, Doctor.
(Counsel conferring.)
BY MR. BURNS:
Q Now, recalling our discussion on your supplemental list earlier today, I noted that you had read the deposition and expert report of Ann Wylie.
Have you ever discussed this case or your findings with Dr. Wylie?
A No.
Q Have you ever spoken to Dr. Wylie before?
A Last summer, once I spoke to her on the phone, I think.

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Q Okay. And what was that about?
A I was curious where I could access some of her data on some of the -- the studies she's compiled or done, so the WebLink distributions, et cetera.
Q Anything else in that conversation?
A No.
Q And was that the only conversation you've had with her?
A That's the only time I've spoken with Ann Wylie.
Q And was that in the context of discussions about asbestos, the conversation you had with her?
A Yeah, so the -- I was looking for the -- the data from both known -- you know, like the -- the standards -- known asbestos versus known cleavage fragments.
Q Did Dr. Wylie inform you that she was serving as an expert witness in this litigation?
MR. FROST: Objection to form.
THE WITNESS: It was prior to this, so neither of us knew.
BY MR. BURNS:

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Q And you haven't spoken to her since your reports came out?
A No.
Q All right. I also noticed you had read the deposition and expert report of Mary Poulton, Dr. Mary Poulton.
A Yes.
Q Have you ever spoken to Dr. Poulton about asbestos in talc?
A No.
Q Any conversations with her whatsoever?
A I've never met her or talked to her, yeah.
Q And you also reviewed the expert report of Dr. Darby Dyar; is that right?
A That's correct, yeah.
Q And have you spoken with Dr. Dyar?
A I met her in October of 2018, I believe, because she was invited to come give a seminar in our department.
Q What was the seminar of?
A It was related to her work on Mars, that program.
Q Did you discuss anything with respect to asbestos or talc?

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A Not in great detail. I mean, I -- I took her to lunch, and we were having a conversation about the general paths of our -- our careers, and so we understood that we were both working with J&J lawyers. But, again, that was prior to this case, and we didn't go into any details.
Q Any specific conversation about asbestos and the talc in J&J mines?
A No.
Q And going back to your conversation with Dr. Wylie, why were you interested in the data you were asking her about?
A Because -- well -- yeah, so I was just doing general consulting, meaning I was doing some research to bolster my understanding of the topic, and, you know, occasionally I was asked to respond to a document or a paper. And so I had seen some of Dr. Longo's reports, and so there was an analysis that -- in one of his reports that related to the size distributions of -- of structures he was measuring with -- with the TEM. And so I was curious about that topic and wanted to explore it further on my own.
Q And who provided you those reports?

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A Those would have come from Jonathan Cooper.
Q And who's Mr. Cooper?
A He's with Tucker & Ellis.
Q So after receiving that data, what did you do?
A I -- I basically -- I mean, with Ann's data or ultimately with the online datasets that they've published, I was able to bring that into Excel, and so I was exploring different methods of plotting the data, aspect ratio versus width or width versus lengths or, you know, the variety of ways, log, normal, just -- not -- excuse me. Pardon me. So, yes, it was sort of an exploration in plotting methods to see what seemed to be most meaningful.
Q And what do you mean by "most meaningful"?
A Well, I mean, in particular, looking at Ann's data, cleavage fragments versus known documented asbestos, seeing if there was a plotting method where you could see a clear distinction in populations.
Q I see.
A I mean, not in a single particle, but,

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again, looking at a data -- a large dataset, what were the --
Q Okay. And did you reach any conclusions?
MR. FROST: I was going to say --
THE WITNESS: Yeah, this is --
MR. FROST: -- I'm going to caution you to the extent that -- we're now reaching into consultancy, which has nothing to do with her work here.
I'm just going to caution her, you know, obviously any communications you've had with lawyers during the consultancy and any work product that you created during the consultancy, I'm going to instruct you not to answer on that. But if it's something that you drew yourself, you know, sort of separately from what you were working with the lawyers on, you know, that you can answer.
THE WITNESS: Pardon me. I have an eyelash attacking my eyeball.
BY MR. BURNS:
Q That's okay. Do you need to take a break or --
A I'll be fine.

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Yeah, I -- honestly, I haven't reviewed that in preparation for this. It's not part of the opinions I'm -- or I offered in my report. So I'd rather not comment on that without having refreshed my memory of those graphs.
MS. O'DELL: If the data has been provided to Dr. Webb, we would request on the record that the data from Dr. Wylie be provided to us. I will formalize that request after the deposition, but I think we're entitled to it if she has reviewed it.
MR. FROST: Again, I think she just said she didn't consider it as any part of this opinion, so I actually -- I will lodge an objection to that. And moreover, I think she testified that she had a link to online data sources that she looked at.
So to the extent that you are insinuating she was provided data by Ann Wylie, I think that is other than what the record reflects here.
MS. O'DELL: I think the record is quite clear, and regardless of that, it was not disclosed --
MR. FROST: And --

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MS. O'DELL: And if it's available publicly, that's one thing, but we have to know that she's been provided that data. And so we would request that it be --

MR. FROST: And I guess I'm just failing to understand why we would have to produce you data that has obviously nothing to do with this engagement. You can send a letter, but, you know, obviously we object to it.

MS. O'DELL: We will let the court decide about that.

MR. FROST: That's fine.

But again, I think she's made it very clear this has absolutely nothing to do with what she's been engaged to do.

MS. O'DELL: Please don't coach the witness.

MR. FROST: Please don't what?

THE REPORTER: I couldn't hear you.

MS. O'DELL: Please don't coach the witness.

MR. FROST: I'm not coaching at all. I'm responding to your statement on the record.

BY MR. BURNS:

Q What was -- what was the form of the

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Longo reports that you had at the time?

MR. FROST: Objection to form.

THE WITNESS: The form of the Longo -- I mean, they were PDF documents that kind of mimicked the format of -- of this. So...

BY MR. BURNS:

Q And this was the summer of 2018?

A I would have to -- that's a -- I mean, my best guess for the general time frame, but I don't remember details.

Q And do you recall whether they were taken from litigation or --

A Oh, they were -- yeah. I mean, they were expert reports, so...

Q Okay. Do you know Dr. Brooke Mossman?

A I've met her once, yeah, or twice now. I ran into her in the parking lot. So...

Q Have you had any conversations with her about this case?

A No.

Q Have you had any conversations with her about asbestos in talc?

A No, not specifically.

Q Do you know a Dr. Shukla, I think in her department?

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A I'm familiar with the name, but I've never met or talked or communicated with her.

Q You mentioned Mickey Gunter earlier?

A Yes.

Q Is that right?

What is your relationship with Mickey Gunter?

A Well, shortly after I came to UVM, he had a -- a Marsh Fellowship, I think is what they call it, but it's basically an honorary visiting professorship. So he's -- it might have been 2009, around that time, that he was in our department maybe for a couple of weeks at a time throughout the -- the year. So that's when I met him.

Q I see. And have you continued a friendship or professional relationship with him since?

A I haven't talked to him since that March Fellowship, so not in eight years or something like that or -- yeah.

Q Have you communicated with him by e-mail or any other means?

A No.

Q No. Dr. Webb, I think we can mark off

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preparation.

A Very good.

Q One left.

MR. BURNS: Should we take a short break?

THE WITNESS: Yeah. Fill my water glass.

THE VIDEOGRAPHER: Going off the record at 2:42 p.m.

(Recess.)

THE VIDEOGRAPHER: We're back on the record at 3:10 p.m.

BY MR. BURNS:

Q Welcome back, Dr. Webb.

Dr. Webb, were you aware that -- that Dr. Mickey Gunter serves as an expert witness for J&J?

A I am aware of that, yes.

Q How did you become aware of it?

A I mean, I knew in general of his involvement as an expert witness from when he visited UVM long ago, but -- I suppose like the details of his working for J&J came out sometime during the consulting. I mean, seeing documents, et cetera.

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Q All right. Dr. Webb, at long last we've made it to the report section.
MR. BURNS: Are you okay?
MR. FROST: Yeah. I just kicked the table pretty hard.
MR. BURNS: That's no fun.
BY MR. BURNS:
Q So I'd like to direct you to, I believe, Exhibit 1. And is this a true and correct copy of your expert report?
A It appears so, yes.
Q All right. And did you prepare this report yourself?
A I did, yes.
Q Did you write every word of it?
A I did, yes.
Q Now, one of the terms that appears throughout your report -- and we'll get to the certain instances of it, but we've also -- I've also heard you mention it today -- is you've emphasized, I believe you call it, high purity talc or cosmetic grade talc deposits.
A (The witness nods.)
Q Can you explain what you mean when you're using that term?

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A Well, I -- I guess I'm making the distinction between a rock that has talc in it or a rock that may have abundant talc in it versus something that is talc rich enough that it would be of interest for the mining companies.
Q And is that really the trigger whether it's -- whether industrial use -- it's capable of industrial use or extraction?
MR. FROST: Objection to form.
BY MR. BURNS:
Q I don't want to put words in your mouth.
A Yeah.
Q I'm just really trying to tease out what you mean by that.
A Well, I mean, I think there are definitions for "cosmetic grade talc," and I know that it reflects -- maybe after a beneficiation, the purity levels that are -- you're able to attain coupled with some other geochemical requirements and in the absence of asbestos.
But I think, you know, one of the distinctions I'm trying to make is a rock that has talc in it versus something that has undergone such extreme degrees of metasomatism that we arrive at the deposits that we have in Vermont and

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Italy and China.
Q Mm-hmm. Would it be fair to say then that that high purity grade of talc deposit is one that is, for lack of a better term, pure enough to attract the interest of industrial or cosmetic purposes?
MR. FROST: Objection to form.
THE WITNESS: Yeah, I mean, they wouldn't be interested in something that wasn't rich in talc and, yeah, relatively high purity.
BY MR. BURNS:
Q So let's say you had a deposit where for every pound of talc you extracted, there was another pound of waste. Would that fall into that category for you?
MR. FROST: Objection to form.
THE WITNESS: Yeah, I don't know. I mean, that kind of gets beyond my area of -- of expertise and distinction, I think. Because, yeah, I'm not an expert in the mining process, and --
That eyelash came back. Sorry.
BY MR. BURNS:
Q Sure. Oh, no.
I guess another way to look at it -- and

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really, again, I'm just trying to understand -- but for this purpose, the only mines you were looking at were in your view high purity deposits because they were used as mines for the talc industry. Is that fair?
MR. FROST: Objection to form.
THE WITNESS: Well, I mean, they're -- so obviously it boils down to my opinion about the mines that were used for the talc that was used in talcum powders, and -- but I was actually looking at a larger body of literature to kind of understand the systems and -- and sort of bracket again these conditions where these rocks formed.
BY MR. BURNS:
Q Just to be sure that I don't miss it if there is a distinction, the J&J talc mines -- what we've been referring to as the J&J talc mines are all in view -- in your view, high purity deposits; is that right?
A Well, yes. Deposits from which cosmetic grade talc can be derived.
Q Okay. And so we've talked about those three mines in Vermont. We've also mentioned some other mines around there, the Johnson mine, Rainbow mine. Would you consider those high

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purity talc deposits as well?
MR. FROST: Objection to form.
THE WITNESS: Yeah. I mean, there may be zones of -- you know, so even the Newfane mine has high purity talc zone in it, but the Newfane mine, that zone is so thin, I think it wasn't economically viable. So it could include mines from which there is no active or was no active mining based on the economic viability of it.
BY MR. BURNS:
Q Okay. So I would like you to turn to page 1 of your report, which contains the executive summary.
A Okay.
Q So as its title indicates, I take it this section summarizes your opinions that you are prepared to testify to in this litigation.
A Yes. An overview of them, yes.
Q Okay. I'd like to start with subparagraph A in Section 1.0 of the executive summary.
So subparagraph A begins with the statement: "Plaintiffs' experts' reports fail to appropriately synthesize key data and observations available in the peer-reviewed scientific

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literature that are pertinent to understanding the issues in this litigation."
Did I read that correctly?
A Yes.
Q Okay. What -- first of all, what plaintiffs' experts' reports are you referencing there? Is it Dr. Cook and Dr. Krekeler?
A Correct.
Q Okay. Any others?
A No.
Q Okay. It's not Dr. Longo?
A No.
Q Do you have any opinions with respect to Dr. Longo's work?
A Not that I'm offering in this report or today, no.
Q Have you -- do you intend to offer opinions with respect to Dr. Longo in the future?
MR. FROST: Objection to form.
THE WITNESS: I mean, I think it depends on the questions that are -- are asked. But that really wasn't my charge to respond to his report, and so, yes, I did read it, but --
BY MR. BURNS:
Q Do you have any criticism of Dr. Longo's

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report today?
MR. FROST: Objection to form. Outside of the scope of this witness's opinions.
THE WITNESS: Can -- can I answer or --
MR. FROST: Yes.
THE WITNESS: Sorry.
MR. FROST: Unless I specifically instruct you not to answer, you can answer.
THE WITNESS: Okay. I mean, yeah, my experience -- for example, anthophyllite and talc have very similar geochemistry -- or, sorry, chemistries that, in general, EDS is not sufficient to distinguish the two. And -- and he never provided quantitative data based on the EDS analyses, and so, you know, there are -- are issues there that I -- I take issue with.
I would also say that I'm not an expert in SAED, so I'm not going to go down that road at all.
Some things that are shown in the TEM images look much more like cleavage fragments to me than asbestos fibrils or bundles, but -- but I guess -- so it's my general reaction to the use of the EDS data, and -- yeah, and the -- and the assertion that some of these amphiboles that

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presumably are identified in there based on the other analyses are -- are asbestos.
BY MR. BURNS:
Q Okay. Anything else?
A No.
Q All right. You next say that Dr. Cook and Dr. Krekeler, the plaintiffs' experts you refer to, failed to appropriately synthesize key data.
What data did you have -- do you have in mind there?
A Well, I mean, the -- the details of the geology of Vermont, the details of the metamorphism recorded by the rocks in the region of -- of interest, they basically present broad generalizations from some of these papers that present generalizations, and, you know, try to make analogies between rocks in the southern Appalachians, and I think the mines in Vermont are a very different beast than the ultramafic bodies that are -- are elsewhere throughout the orogen.
Q Okay. What about Italy and China?
A Yeah, so with China, I didn't see them zeroing in on the -- the Guangxi mines that were actually used. There -- I know Krekeler, I think

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specifically more than Cook, at least what I remember offhand, is that, you know, a lot of his discussion included mines that were thousands of kilometers away off in the Shandong Peninsula that were totally irrelevant.

So, again, it's the lack of detail related to petrological evolution in the immediate vicinity of -- of the mines from which the talc was derived.

Q And you next question the observations available in the peer-reviewed scientific literature that are pertinent to understanding the issues in this litigation.

Is your use of data and observations there somewhat synonymous, or are you drawing a distinction?

A I mean, there -- yeah. I guess it's redundant in a sense.

Q Not criticizing.

A Yeah.

Q Okay. Just trying to understand whether there is a unique distinction there.

You reviewed, and I can't remember the precise number, quite a few articles and reports with respect to the geology of Vermont. Is that

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fair?

A Yes.

Q Okay. Do any of those reports stand out to you as particularly sound in terms of their methodology, their primary sourcing, et cetera?

MR. FROST: Objection to form.

THE WITNESS: Particularly sound? Well, certainly, as I mentioned before, the Sanford 1982 article really is the -- the piece of literature out there that looked into the systems in which talc is forming in -- in these rocks. You know, it's really, again, kind of putting together the body of data.

But I will say Chidester comes up. There -- there are a number of -- of articles that make this same statement, and this is what I think is key, is that -- again, there's a polyphase tectonic history. So we've got three big orogenic events that kind of build up the geology in Vermont and influence it.

And the people who have looked at those rocks -- so Chidester said it, Sanford said it -- those are the two that really come to mind -- is that when they look at the relationship between where asbestos is formed and where the talc is

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forming, they see information that is very clearcut that they are not part of the same event. And that is, that the asbestos forms during late -- presumably in the tectonic orogeny when these rocks are at low temperatures, low pressures, they're -- these ultramafic bodies, which were, you know, basically the rock collage when it was kind of assembled at that time for a large part, especially the bodies where the asbestos is documented.

So in the late stages of the tectonic orogeny about 450 million years ago, that's when these ultramafic rocks are forming brittle fractures. Water rich fluids are interacting with them. Serpentinization is occurring. And that is when the chrysotile asbestos forms. And the few instances that are documented of tremolite asbestos are also part of that same event.

Now, the talc, as I said before, forms during the Acadian orogeny, so that's 80, 90 million years later, under very different conditions. And I would also say that the rocks from which the -- the cosmetic talc is derived in Vermont is in a different geologic belt than the asbestos-bearing rocks.

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But in any case, if -- you know, so the -- the Acadian orogeny event where the talc is forming is at much higher temperature conditions. The rocks are deforming ductilely. There's this intense metasomatism that's going on, and that is the diffusion of chemical elements across these rock boundaries that is basically changing the composition of the ultramafic rock to something that's much closer to the talc composition.

That's why I have those weird triangle diagrams in my report to demonstrate that. Sorry, they're not weird to me, but I know they're odd to others, a non-petrologist. I'll clarify that.

And so we really have, again, a different set of conditions. The fluids are water and carbon dioxide rich in the Acadian orogeny. And, again, there's no asbestos as far as I've been able to determine that are recorded in those rocks in any clearcut fashion, but, say, had chrysotile been present in the ultramafic bodies from which the talc formed, it would have been erased by that -- that metamorphic process.

So this is why I say I don't see any documentation of it, nor were the conditions appropriate. Because, again, where it's been

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documented, it's -- asbestos is forming under -- in different places in space and time and under different conditions than the -- than the talc forms.
BY MR. BURNS:
Q Okay. So just to be clear, it's your opinion that you've not seen any evidence of asbestos in the J&J talc mines that we have been discussing, right?
A That's correct.
Q Okay. Is it your opinion that there is no evidence of asbestos in those J&J talc mines?
MR. FROST: Objection to form.
THE WITNESS: It's not been demonstrated to -- no evidence has been demonstrated to me in the -- in the literature or the reports that I've reviewed.
BY MR. BURNS:
Q Okay. Let me ask you a follow-on question then.
Is it your professional opinion that it is impossible for asbestos to exist in the talc sourced from the J&J talc mines?
MR. FROST: Objection to form.
THE WITNESS: It's extremely unlikely.

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BY MR. BURNS:
Q But not impossible?
MR. FROST: Objection to form.
THE WITNESS: Geologists don't like using the word "impossible," but I would be extremely surprised.
BY MR. BURNS:
Q Can you in your professional opinion imagine circumstances where the chrysotile or tremolite asbestos made its way into talc deposits and was not erased by that process you were describing?
MR. FROST: Objection to form.
THE WITNESS: Not in the local geology.
BY MR. BURNS:
Q Not in Vermont.
A Not -- yeah.
Q How about -- and, again, focusing on Vermont here. We'll get back to China and Italy.
So focusing on Vermont, have you seen evidence of fibrous talc in the talc that was sourced from the J&J mines?
MR. FROST: Objection to form.
THE WITNESS: I've seen evidence of fibrous talc recorded in the thin section

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descriptions. Again, I wasn't looking at the finished products. So I don't want to offer opinions on those, but --
BY MR. BURNS:
Q You mean you haven't actually seen the thin sections. You're -- you've read descriptions of them in the findings. Is that what you're saying?
MR. FROST: Objection to form.
THE WITNESS: In the literature and reports that I reviewed, that's what I'm summarizing, yes.
BY MR. BURNS:
Q Do you have any opinion as to the -- as to whether the appearance of fibrous talc would be common in the talc sourced from the J&J mines?
MR. FROST: Objection to form.
THE WITNESS: It could be present.
BY MR. BURNS:
Q In sub- -- in substantial quantities?
MR. FROST: Objection to form.
THE WITNESS: I have no -- I mean, I think they are principally -- my understanding is they are principally looking for platy talc, but, you know, so in rock bodies dominated by that, you

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can't rule out the -- the local presence of a fibrous talc.
BY MR. BURNS:
Q So it could be present.
A Yes. I mean, we know it forms from often -- I mean, a fibrous morphology again is the result of the way the metamorphic reaction proceeded, so those reactions are documented in these rocks. So, yes.
Q Let's focus on China for a moment and the Guangxi mines. What is your -- is your opinion the same with respect to those mines as it is with the Vermont J&J mines?
A Yeah. I mean, they formed in a different bulk composition and a different system, but at similar metamorphic grades and with similar principles at play. And once again, I never saw anything in the literature related to the local geology around those mines to support an assertion of the presence of asbestos.
Q Did you see anything in the literature related to the local geology of those mines?
A Yes.
Q What was that?
A Well, so -- I mean, I cite the papers

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that I -- I looked at. But basically that region is -- is described in some detail in studies of -- and people who were again looking at the tectonic evolution of the rocks, but -- say Yao, et al., 2016, which is where the map figure is derived, the Guangxi mine plots within that -- that mapped area, and the formation of talc in those units is described in the literature.

Lee, 1979, actually documents that in detail and explores the -- the metamorphic reactions involved in generating the -- the talc.

So, yes, there is -- there are descriptions of the local geology in -- of the units that are bracketing the talc bodies and from which the talc was derived or formed.

Q But none of those are specific to the Guangxi mine; is that right?

MR. FROST: Objection to form.

THE WITNESS: Oh, well, I mean it is specific to them. This is the area that the -- the mines are located. It relates to the units that are documented in the -- the IMS documents that describe the mines. So...

BY MR. BURNS:

Q I guess I -- maybe I did not phrase that

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quite the way I should have.

But, again, those descriptions are on a regional level, right? They're not specific to any particular mine or samples from that mine, correct?

MR. FROST: Objection to form.

THE WITNESS: They're specific to the local geology around those mines.

BY MR. BURNS:

Q Is the local geology similar to the geology found here in Vermont?

A I mean, it's a -- it's a different -- it's a different continent. It's got a different history. In this case you have dolomitic marbles that were juxtaposed next to mafic igneous rocks that underwent a tectonic episode 400-something million years ago, where there was ductile deformation associated with the faults that are shown on -- on the map. And you had silica rich fluids present during metamorphism. And so, again, it's a case of metasomatism, a case of chemical exchange.

So some elements of the process are the same or similar, but the -- the details of the geology and the rock types are -- are quite

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different when you're talking about the -- the genesis of the talc itself.

Q What was the nature of the underlying rock? Was it ultramafic or chloritic?

MR. FROST: Objection to form. Where?

BY MR. BURNS:

Q In China.

A Yeah. So, again, dolomitic marbles juxtaposed next to these mafic igneous rocks that underwent greenschist facies metamorphism. So, again, that's in that range of, say, 500 -- around 500 degrees C.

So, yeah, in some of the mafic units, I mean, there -- yeah, there's -- there's chlorite present locally. They -- they don't describe the same blackwall zones, and that's again because the rock types are different. So...

Q And what is a blackwall zone?

A It refers -- well, so in -- in Vermont, it refers to the -- the zone that's right at the contact of the ultramafic rocks and the country rock, and so there are chlorite and actinolite rich domains. In some cases, also biotite, which would truly give it the black color. But they would be very dark rocks in comparison to the talc

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rich rocks that they're juxtaposed with.

Q I'll hand you what we'll mark as Exhibit 11.

MR. BURNS: I think we got these from your materials. Is that where they came from?

MR. FROST: Yeah.

MS. O'DELL: Yeah.

MR. FROST: Yep, that's fine. I know what this is.

MR. BURNS: Okay.

(Webb Exhibit No. 11 was marked for identification.)

BY MR. BURNS:

Q Is that the document, Exhibit 14, that you relied on for your opinions with respect to China?

A It's one of the documents.

Q Okay. Now, that is in Chinese. Do you read Chinese?

A I know a few characters.

Q Okay. Is there an English translation that you relied on or --

A I asked counsel if -- if that service would be available for this document, and it was provided.

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However, even prior to that, though, I was able to correlate the -- the map unit names that are not in -- in Chinese, and so able to deduce -- I don't have it. I'd have to refer to the series of documents to point out, but, you know, the geologic layer in the map that was associated with the -- the talc formation.

And there are also some chemical reactions that are written in English characters, and so I can read -- read those. But -- but, yes, the details of -- that are hidden in the Chinese characters, I relied on the translation for that.

MR. BURNS: And, Mr. Frost, can you provide that?

MR. FROST: I'm sure I can find it. It might even be in the box.

MS. O'DELL: Do you know how we would identify it? Is it --

MR. FROST: It would say "Lee." I mean, I think I could find it in electronic form, and I'll e-mail it to you.

MS. O'DELL: Okay.

MR. BURNS: Thank you.

MR. FROST: That might be the easiest way to dig it out.

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MS. O'DELL: Eric, can you do the translation?

MR. FROST: He might be able to. Alex.

MS. O'DELL: Alex.

BY MR. BURNS:

Q You said that was one of the documents. What was the -- what were the others?

A Yao, et al. Zhao, et al. Yao, et al., 2016. Zhao, et al., 2018.

MS. O'DELL: Do you mind spelling those, please?

THE WITNESS: Yao, Y-A-O, et al. And Zhao, Z-H-A-O.

MS. O'DELL: Thank you.

BY MR. BURNS:

Q What about the peer-reviewed literature allowed you to reach the same conclusions with respect to Italy?

A Well, so in Italy, there's actually more direct description of the, I'm going to say, Fontane, and it's probably pronounced differently in Italy. I'm better with the Chinese pronunciations than the Italian.

So there are a number of publications, albeit it a small number, but that do describe

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these deposits directly. There the talc formed early in the history of -- of the rocks. Because, again, I mean, the -- this -- this region has, again, a very complicated history represented by hundreds of millions of years, and, you know, they're in the Alps today, but that is a Cenozoic collision orogenic event that built up those mountains.

But the -- the people, again, who studied the minerals present, their textural relationships relative to one another, the different structural elements and their relative age relationships, all demonstrate -- I mean, it's pretty much a consensus out there that the talc formed in this pre-carboniferous basement. So, you know, the constraint in the literature is around 355 million years or -- or prior.

And the mineral assemblages, again, not the talc specifically but in the rocks, the system of rocks in which the talc is embedded record evidence for metamorphism at up to like 575 degrees C or so, 600 degrees C, during an older orogenic event. And then talc being very stable, unless you achieve temperatures much higher than -- I mean, close to 700 degrees or higher,

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that talc basically went for a ride down a subduction zone and came back up.

So that's why I'm familiar with the area generally, because it's another case of one of these ultra high pressure terrains like I studied for my Ph.D.

But, again, it's a mesomat- -- well, there's kind of two theories out there in terms of either the talc formed from a sepiolite horizon, which has a chemical formula very similar to talc. So that transformation would be just a function of sepiolite having gotten hot enough to react to form talc.

But the relationship between -- of the talc bodies basically being at this interface of, again, carbonate rocks and mafic gneisses suggest to me, rather, that it was again a case of metasomatism, a chemical exchange across rock boundaries during high temperature metamorphism that allowed the transformation of volumes of rock to basically move towards that talc composition.

So, again, it's the integration of what people have seen in terms of mineral assemblages, textural relationships, relative age relationships, et cetera, that led me to my

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opinion.
Q And what are your principal sources for your Italian theories -- or, sorry, opinions?
MR. FROST: Objection to form.
THE WITNESS: So could -- those papers that I cite here, Cadoppi, et al., 2016; Sandrone, et al., 1990; Sandrone and Zucchetti, 1988. There's Del Greco and Pelizza, 1984.
BY MR. BURNS:
Q Are there any that are not cited in your report?
A I don't believe so. I mean, if they are, they would be in the reliance, but I think this is the key body of the papers.
Q Oh, Exhibit 14, that Chinese document, how were you able to locate it or find it?
A I don't remember whether it was with GeoRef or using Google Scholar, but I -- you know, searching again the scientific literature, and -- specifically for -- so this is why I asked for the -- the Imerys China mine documents was -- I used those to get the formation names at the mines of interest, and then I searched the literature for those formation names.
The -- the Imerys documents also had

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coordinates of the mines in some cases, and so I used those geographic coordinates to, for example, determine that I was looking at the same geology that's shown in this map figure.
Q Okay.
A Or, rather, that the geology shown in that map figure described in those articles was relevant to the mines.
Q So turning to subparagraph C on the first page of your report, you say: "There is no well-founded, scientifically sound evidence in the peer-reviewed scientific literature for an association of amphibole asbestos with the talc deposits of concern."
So I think we've run through the literature you consider well-founded.
Is there literature out there in the peer-reviewed scientific literature that you don't consider well-founded or scientifically sound that supports the association of amphibole asbestos with the talc deposits of concern?
A I've never seen anything in the published peer-reviewed literature that implies specifically that there is asbestos in these -- these talc mines.

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You know, part of, I guess, what I'm responded to are summary papers like Van Gosen, et al., 2004, that at kind of a surficial level, if you read that paper, you would come away with the impression that it was highly probable.
But, again, when you dive into the details of the geology and you really start to understand how these very unique bodies formed, there's just -- there's just nothing that would lead you to that association.
Q What about Doll? Anything in Doll that you consider not scientifically sound or --
A The Doll, 1961?
Q I think that's the right year.
MR. BURNS: Do you have that handy?
MS. O'DELL: It may be '65.
THE WITNESS: I'm not sure I cited that or --
BY MR. BURNS:
Q It's in your materials. Let's take a look. '61.
MS. O'DELL: '61.
MR. BURNS: '61.
THE WITNESS: I mean -- sorry.
BY MR. BURNS:

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Q Go ahead.
A Is that the -- so is that the question, Doll 1961?
Q Yeah, that's the question. I think it's '61. Mm-hmm.
A Doll 1961 is a published bedrock map of Vermont.
Q Mm-hmm.
A So it is the version that existed prior to the update, which is Ratcliffe, et al., 9 -- or 2011.
So, yeah, some things have changed. There's been some new -- new mapping, some new age data that's come out, so, you know, things have shifted, but that was the state of knowledge at that time.
Q Mm-hmm.
MR. BURNS: What's that?
Leigh, I think you said it was 20.
MS. O'DELL: 20.
MR. BURNS: Yeah.
(Counsel conferring.)
BY MR. BURNS:
Q Oh, I see. I thought it was the statement of the geologist at the time.

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We're referring to bedrock geology of the Woodstock quadrangle in Vermont by Chang, Ern and Thompson. Are you familiar with that?
A Was that 1965 or thereabouts? I know I made reference to one Chang article.
Q Judging by the font, 1965, you're right.
A Sorry. I'd just like to find that in my report.
Q Sure.
MR. FROST: Did you say it was Chang, C-H-A-N-G?
MR. BURNS: Yeah.
THE WITNESS: Right, I think this -- my citation to it relates to the Five Corners mine.
BY MR. BURNS:
Q Okay.
A On page 21.
Q More broadly, is this an article that you considered to be well-founded? Sound -- scientifically sound?
A Well, it's -- I wouldn't say I would venture an opinion on the entire body of that document. I -- again, I looked at that specifically with respect to Van Gosen's 2006 citation. Or maybe he -- no, I forget. Did he

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actually even cite that and I came across it myself?
Okay. So I found a reference to chrysotile in the Five Corners mine in that -- that document. But Van Gosen actually did not include that one.
I mean, I don't -- I don't take issue, you know, with --
Q Okay.
A -- chrysotile at the Five Corners mine.
Q Any other criticisms of that article you recall?
A Not that I think are -- no.
Q Let's turn to page 13.
And I'm looking at Figure 7. I believe this is chemographic diagrams for the -- oh, geez -- calcium oxide, silicon oxide, magnesium oxide -- chemical system for calcareous and ultramafic rocks modified from Winter, 2001.
Is that correct?
A Yes.
Q Okay. How was it modified?
A Well -- I think I added color. I also I think added the position of actinolite, which would plot similarly to tremolite in this system,

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if there were enough iron for actinolite to form.
I also, you know, basically then took a subset of that figure to -- for just a smaller demonstrative and a smaller version of the chemographic diagram in the upper left.
Q Mm-hmm. Okay.
A But, otherwise, it's -- it's pretty -- pretty similar.
Q Is this diagram -- and forgive me for being confused on it -- but would this diagram be accurate for the J&J mines in Vermont?
A Actually, it would, because those ultramafic bodies are extremely magnesium rich. And so -- yeah, I mean, that ultramafic bulk composition, based on the data that have been published for a larger and more unaltered body in Ludlow and Dover, would -- would plot where that -- that purple triangle is.
THE REPORTER: That what? I'm sorry.
THE WITNESS: Sorry. Where the purple triangle is in the diagram.
BY MR. BURNS:
Q Did you plot this for Italy or China?
A I did not.
Q Would it differ?

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A Yeah, I mean, those again would be a little bit more -- the general principle I'm trying to -- to show here holds in the sense that in order to make a talc ore, you have to have sort of extreme metasomatic events to change the bulk composition of the rock to something that is very close to -- to talc.
So in principle, it fits, but in terms of that, of that system, because it's limestones and marbles juxtaposed next to schist, and then mafic, but not ultramafic, the -- the chemical components you would need to consider would be slightly different.
Q How would it change the plotting? What would be the effect?
MR. FROST: Objection to form.
THE WITNESS: Yeah, well, you would probably need to combine some chemical components. Again, this is -- this is assuming that, you know, you've got these three components that are shown at the apices of the triangle are dominating the system.
So, depending on what those chemical components would be, you would have different minerals and minerals plotting in different

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positions in that diagram compared to what they are here.
BY MR. BURNS:
Q And do you have sufficient data for Italy or China to plot something similar?
A No. And -- I mean, I could find that, but again this -- the purpose of this was really to try and illustrate the point that while you can have talc in carbonate or ultramafic rocks, with a variety of minerals in your sort of general metamorphic rocks, it takes a special process to make a talc ore.
So, you know, I didn't engage in an analysis with this beyond that. It was meant more to -- to try and illustrate a key concept.
Q Let's go back --
MS. O'DELL: Jack, would you please provide White, 2001.
MR. FROST: If I have it.
MS. O'DELL: It's not --
THE WITNESS: It's a textbook.
MR. FROST: Oh, is that what it is?
THE WITNESS: It's a geology textbook.
MR. FROST: Yes. I don't have it, but I'll see if we can do anything during a break.

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MS. O'DELL: That would be -- that would be good.
MR. FROST: Yeah, no promises, though. I can't guarantee I can get it.
MS. O'DELL: Well, I mean if she is relying on it, and it's something she has based a figure in her report, then we requested those materials. So I understand the issue, but if you could work on it.
MR. FROST: As I said, I'll see -- I'll see if we can --
MR. BURNS: And I think you're referring to Winter, right?
THE WITNESS: Yes, Winter.
MR. FROST: I was going to say --
MS. O'DELL: Excuse me. Excuse me. Winter.
MR. FROST: Winter, I've got a better shot of finding, so at least I know what that is. But I don't know if I can get it, but I'll see what we can do during a break.
MR. BURNS: Winter is coming.
MR. FROST: That's right. Hopefully not. Spring and summer are coming.
MR. BURNS: Thought I'd throw it out.

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MR. FROST: I'm done with winter.
MR. BURNS: That was for the "Game of Thrones" fans in the audience.
BY MR. BURNS:
Q Going back to page 1 of your report.
In that subparagraph C, you say based on your "reviews of the geology associated with the applicable mines, and the pressure and temperature histories recorded by the rocks, any amphibole found in Johnson's Baby Powder and Shower to Shower derived from the Fontane, southern Vermont, and Guangxi talc mines would likely be incidental actinolite or tremolite cleavage fragments from non-asbestiform amphiboles, most likely derived from the margins (blackwall zones) of the talc deposits."
Is that correct?
A Yes.
Q Okay. What do you mean by "incidental actinolite"?
A Well, that principally, except right along the -- the margins of the blackwall, you wouldn't expect actinolite to be present in the main body of talc ore, because the bulk composition isn't really appropriate for that.

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And tremolite, also you wouldn't expect in great volumes in the talc itself, and that's because calcium is an essential element in these minerals.
And again, the chemistry that's reported for the -- the Ludlow and Dover bodies, which are our best proxy for the ultramafic protoliths, the mantle rocks that we started with, really low calcium levels, so -- whereas the metasedimentary and metavolcanic wall rocks are -- are more calcium rich, more iron rich. And so, you know, that's where the blackwall -- the actinolite in part -- by definition is part of the blackwall, these actinolite zones.
So, I guess "incidental" would mean that some accidental incorporation of -- of the blackwall.
Q Meaning that the mining encompassed part or all of that -- of one piece of the blackwall.
A Yeah. I mean, I don't -- again, I don't know. Basically, it's like I can't come up with a petrologic argument to say those should be present in any abundance in the -- the talc that was the desired mining product. So it's most likely coming from the margins. But...

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Q Okay. Is actinolite a regulated form of asbestos?
MR. FROST: Objection to form.
THE WITNESS: Asbestiform actinolite is one of the regulated minerals, yes.
BY MR. BURNS:
Q And you mentioned specifically tremolite cleavage fragments; is that correct?
A Well, actinolite or tremolite cleavage fragments.
Q Okay. So both -- both modified --
A Yeah, meaning that this actinolite, the tremolite is not -- asbestiform did not grow in that primary growth habit, and rather, could be ablated or acicular or prismatic tremolite that -- I guess then if it's -- somehow in the talc undergoes, you know, the beneficiation process, so crushing and grinding and breakdown into cleavage fragments.
Q So is it your testimony then that there would be no asbestiform actinolite or tremolite in the talc?
A That's -- yes, that's my testimony.
Q Okay. Let's turn to page 11. And to Figure 6.

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So Figure 6 is a "Pressure-temperature diagram modified from Winter (2001), showing in gray the general boundaries of the different metamorphic facies (for example, greenschist facies) that represent conditions under which certain combinations of minerals (i.e., equilibrium assemblages) are stable as a function of a rock's bulk composition."
Is that right?
A Yes.
Q How was this modified from Winter?
A I added in -- I believe the reaction curve for chrysotile and lizardite maximum stability, and that was taken from Evans, 2004.
Q And that was the tremolite?
A That was the chrysotile --
Q Chrysotile. Sorry.
A -- and lizardite maximum stability, the brown dashed curve at around 300 degrees C.
Q So Evans, 2004?
A Yes.
Q Okay.
A And then I also added the -- the green roughly oval-shaped region that was meant to encompass the -- the general range of pressure and

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temperature conditions under which the talc ores formed.
Q In all of the Fontane, southern Vermont and Guangxi talc ores; is that right?
A Yeah. In general, there's some overlap there. Guangxi would be more firmly in the greenschist boundary; Vermont would be more in the epidote-amphibolite facies, with the Fontane as well.
Q Okay. So there's a note in your description of Figure 6 that: "Conditions favoring asbestos formation are generally associated with low-temperature and/or low-pressure conditions," and then you describe the zeolite, prehnite, prehnite-pumpellyite --
A Yeah, prehnite-pumpellyite.
Q Pumpellyite. Thank you.
-- and hornfels facies, right?
A Yes.
Q Okay. And just so we are all on the same page and we can look at the same thing for a second, I'm going to circle each of those areas.
See if I get them all correctly. I've tried to circle here the areas where conditions favor asbestos formation. Did I capture them all?

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A Yeah. I mean, in terms of low temperature, that could extend up to the -- the blueschist facies.
Q Mm-hmm.
A I mean, the key thing is there, again, low-temperature deformation tends to be more brittle and -- and allow the -- the ability for fractures to open, which is one of the -- the most common site for asbestos to -- to form.
Q Okay. Now, is it --
MR. FROST: Just a -- I'm just going to object to some of the circles. It seems different than what's listed at the bottom of Figure 6.
MR. BURNS: And if it is, let me know.
THE WITNESS: The hornfels, I was just speaking generally to the -- the high temperature, low -- low pressure. So...
BY MR. BURNS:
Q So would it include the albite-epidote-hornfels, which looks to be low pressure, relatively low temperature or --
A Yeah. I don't have an issue with what you circled. I mean --
MR. FROST: I just wanted the record to be clear.

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MR. BURNS: Mr. Frost -- Mr. Frost does, but --
MR. FROST: But I just wanted to make sure the record was clear.
MR. BURNS: All right. Fair enough.
BY MR. BURNS:
Q So you mention -- mentioned fractures. And I believe you said that fractures are one of the conditions where asbestos can form. Is that correct, or something along those lines?
A Yes, most -- most commonly as those cross fibers or slip fibers.
Q Mm-hmm. So, speaking generally and recognizing -- well, strike that.
Not having your background and expertise, I have some general questions about this.
So it appears from this figure that the talc in the Fontane and Vermont and Guangxi ores, in your view, based on its -- based on I guess that regional petrology and circumstances there, would have formed at about, what, 500 degrees Celsius and 0.6 GPA pressure; is that right?
A That's a good ballpark.
Q Okay. And the conditions for the

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creation of asbestos sort of surround that area, but obviously at different pressures and different temperatures.
Would minor variations in temperature or in pressure, had they occurred, could those have resulted in asbestos materials coming into the same ores?
A I don't --
MR. FROST: Object to form.
THE WITNESS: I don't believe so.
BY MR. BURNS:
Q And why?
A Well, again, when you're at the low temperature end and rocks are -- would deform brittlely, again that's generally when fractures could open. And because of the primary growth habit of asbestiform fibers, they're basically growing into -- into void spaces. So that's a precondition, coupled with fluids that are saturated and the chemical components from which the asbestiform minerals would grow.
When you look at the -- when I say -- or generally the hornfels conditions here, yeah, you have higher temperatures, but you also have very low pressures. And so rock strength increases

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with depth because of the weight of the overlying column of rocks, and so if you're at low pressures, the rocks are a bit -- a bit weaker, but you don't have that pressure that basically fights against voids opening.
So the rocks either have to be low temperature and brittle because of that or shallow in the earth's crust to basically not have enough weight down on you to -- to keep voids from opening.
You know, whereas the -- the conditions of metamorphism for the formation of talc, much higher temperatures and, you know, 20 kilometers deep. That's pretty deep in the continental crust. And we know from people who have studied the -- again, the structures that these were undergoing ductile deformation at the time.
So it's just those geologic conditions aren't -- that's why I say they aren't favorable, aren't -- aren't amenable.
Q At the same time, right? Is that the issue?
MR. FROST: Objection.
BY MR. BURNS:
Q It would be difficult to have the same

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conditions exist at the same time for the creation of both the asbestos materials and the talc ores. Is that right?
MR. FROST: Object to the form.
THE WITNESS: Yeah, I mean, I would say that, yes, at the time the talc was forming, the conditions were not appropriate.
BY MR. BURNS:
Q Okay. Now -- but I believe we've described circumstances where -- I'm thinking of Italy where you said the talc may have formed earlier in the continent's subduction zone, but have survived the subduction.
Is it possible that -- are there circumstances where asbestos could form at a later time and under favorable circumstances where the talc would remain solid, because it's a stable mineral, but a fracture, for example, could lead to the incorporation of asbestiform materials?
MR. FROST: Objection to form.
THE WITNESS: Well, I mean, I suppose we could devise a hypothetical situation where the conditions were all ripe for this to happen, but there's no evidence that that's the case.
As I said, all asbestos in Vermont,

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everybody has written about it, there's no disagreement that that occurred, you know, 80 million years prior to the formation of the talc, give or take a few million years.

And the conditions that postdated the formation of the Italian talc in the Fontane mine were way up here (indicating). So, I mean, maybe similar in temperature, but much, much higher -- higher pressures. Yeah, they're back at the -- the surface today, but, you know, I think -- again, when asbestos forms, it's -- it's regional conditions that allow that to occur, and so we'd have other -- I would expect to see that documented throughout the -- the geology. And I just -- you know, I don't see any evidence for it.

BY MR. BURNS:

Q Turning to the Vermont example where the asbestos formed before the talc, are fractures again a potential explanation for migration of the asbestos --

MR. FROST: Objection to form.

BY MR. BURNS:

Q -- subsequently?

A I've never heard of migration of asbestos, so I don't know --

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Q Well, I didn't really mean migration. I mean the filling in of those -- those fractures with the asbestiform materials.

A I mean, dominantly in Vermont where asbestos is documented, it's says cross and slip fibers.

Q And what do you mean by that?

A That basically as these fractures were opening, they're apparently, you know, filled with fluid at the same time that became saturated in the chemical component, so the chrysotile chemical formula basically, that those minerals or, you know, fibrils nucleated on walls of -- of the fractures, and depending on whether they opened like that or like that (demonstrating), in this case they appear to continue to grow as the fracture continues to open. So it's -- the nucleate on either side and -- or there are some veins where things nucleate in the middle initially, and then grow outward as well.

But in any case, the fibrils would be growing as the fracture is opening. So cross fibers would be perpendicular to the fracture walls. Slip fibers would be one of those fractures where there's, you know, some offset

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along that, and that's when you would get the fibrils basically at an angle to the -- to the fracture walls connecting on either side.

Q Okay. And you say that is the most common means by which the asbestos occurs in Vermont?

A (The witness nods.)

Q But not with respect to the J&J mines.

MR. FROST: Objection to form.

THE WITNESS: I'm -- I don't know what you mean by that. Sorry.

BY MR. BURNS:

Q Well, meaning because you haven't seen any evidence of asbestos in the J&J mines, what you're describing there would not be true of those mines?

A Yeah.

MR. FROST: Objection to form again.

BY MR. BURNS:

Q Given the geologic -- given the geology -- the local geology of the J&J mines, would that process have been possible?

A I mean, again, we could devise a hypothetical situation that might satisfy those conditions, but I --

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Q I realize you haven't seen it, but would -- would it be possible?

MR. FROST: Objection to form. Inappropriate hypothetical.

THE WITNESS: Yeah, I'm sorry, I don't know how to -- you know, lots of things are possible, but many things don't happen. So I can't -- I don't -- I can't comfortably answer that without having all of the variables sort of outlined for me and --

BY MR. BURNS:

Q Well, I certainly understand that, but really I -- we're talking about a pretty small set of variables, the ones you described as relatively common in Vermont in terms of the formation of asbestos materials.

And what I'm saying is, given the regional geology that's present in the J&J mines, is it possible -- not probable, not, you know, highly possible -- but is it possible that that process of the creation of asbestos may -- may have occurred in a similar fashion in those J&J mines?

MR. FROST: Same objection to form and inappropriate hypothetical.

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THE WITNESS: Yeah, like I said, we could devise a -- a scheme presumably in which that could occur, but it's -- while it might be possible in some parallel universe, I -- I just -- it's not probable, and I just don't see any evidence for it having occurred here.
BY MR. BURNS:
Q Well, what would constitute evidence for you in that context?
MR. FROST: Objection to form.
THE WITNESS: Well, I would imagine that in that belt of rocks, people would record fractures filling with asbestos, more generally, in the literature. Because, again, people have been looking at these rocks for over a hundred years. People are certainly interested and concerned about asbestos.
So, had -- you know, it would be documented in some of these, you know, Vermont state reports, the USGS reports in the peer-reviewed literature around the Chester dome, and it's just -- it's not in anybody's data and observations in the -- in the field.
BY MR. BURNS:
Q Well, what if it -- and this -- just

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throwing this out there, what if -- what if it was documented in a core log or observations by the mining company at, say, the Argonaut mine, would you consider that evidence?
MR. FROST: Objection.
BY MR. BURNS:
Q That would at least merit additional testing?
MR. FROST: Objection to form.
THE WITNESS: Well, I mean, you know, if you've got evidence where people have -- I mean, where I can understand the methodology that was used and see the data and observations -- I don't want to take some random person who I don't know their qualifications or what they're describing. You know, so I'd be happy to -- if you've got something you want me to look at that -- that presents that, to consider it, sure.
BY MR. BURNS:
Q Okay. But you weren't presented any such evidence when you were doing your report.
MR. FROST: Objection to form.
BY MR. BURNS:
Q Correct?
MR. FROST: Supposes there's evidence.

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THE WITNESS: Yeah, and I did not find any, because, again, the vast majority of what I looked at was my own research.
MR. BURNS: Okay.
THE WITNESS: Can I take a quick break?
MR. BURNS: Oh, of course, sure.
THE WITNESS: I've been drinking a lot of water and tea and --
MR. FROST: Yeah, I was going to say, actually, I could use the restroom.
THE VIDEOGRAPHER: Going off the record at 4:26.
(Recess.)
THE VIDEOGRAPHER: We're back on the record at 4:57 p.m.
BY MR. BURNS:
Q Welcome back, Dr. Webb.
So, Dr. Webb, we were talking about when last we left off, evidence -- evidence for asbestos in talc in the J&J mines in Vermont, specifically.
MR. BURNS: Let's go ahead and mark this, Amanda.
(Webb Exhibit No. 12 was marked for identification.)

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BY MR. BURNS:
Q All right. I'm going to hand you what we've marked as Exhibit 12.
And just let me know when you are ready, if you want to take a second to look it over.
A Okay. (Peruses document.)
Okay.
Q All right. Dr. Webb, have you seen this -- well, let me start.
Exhibit No. 12 is a document bearing the Bates labels IMERYS 219720-722. It appears to be dated March 25th, 1992. Title appears to be "Cyprus Ore Reserves - Arsenic & Tremolite."
Did I pronounce that -- or did I read that correctly?
A "Cyprus Ore Reserves - Arsenic & Tremolite," yes.
Q Okay. Great.
Have you seen this document before?
A I have not.
Q Okay. This -- and have you had a chance to read it?
A I did, yes.
Q Okay. And is it fair to say that this document contains some discussion about the

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presence of asbestos materials in talc deposits in Vermont?
A It mentions fibrous amphiboles.
Q Including tremolite; is that right?
A Yes.
Q Okay. Is this the type of evidence that would give you some concern if you had been presented it when conducting your analysis?
A Not really, because fibrous is a -- a general term for maybe an elongate or long aspect ratio, but it's imprecise, and so it doesn't necessarily indicate asbestos.
Q Fibrous tremolite?
A Yes.
Q It doesn't indicate asbestos to you?
A No.
Q Okay. Why is that?
A Again, because "fibrous" is used by different people in different ways, and I've seen many instances in the literature where it's used for -- synonymously with like acicular. I mean, I've used the terms "fibrous" in my work when I'm talking about working with fault zones and -- and quartz fibers, for example. But, again, it's because they're crystals with long aspect ratios,

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and it's -- it's not synonymous, not -- you can't take this to -- to indicate asbestiform tremolite.
Q Have you -- what would you -- what else would you need to take it to mean asbestiform tremolite?
A Well, some detailed description about the habit of the minerals that is consistent with the definition of "asbestiform."
Q Well, so I'll direct you on page 2 to the fourth paragraph down.
It says: "Cyprus claims that there are no fibres in their cosmetic talc products, and they work rigorously to ensure this. However, a recent paper published by Rutgers University worker, Alice Blount, suggests the presence of fibre in several cosmetic talcs, some of which might have been from Cyprus West Windsor material, which is a source of great concern to Cyprus management, and potentially to their principal customer, Johnson & Johnson."
Why would Cyprus be concerned about fibrous asbestiform materials, including references to fibrous tremolite, if it were not asbestos?
MR. FROST: Objection to form.

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THE WITNESS: Well, again, I mean, it's the use of the -- fiber's an imprecise term. I mean, obviously they don't want asbestos in -- in their product, so -- but, again, I don't -- I don't see anything here that -- that indicates this term is -- is really -- equates to asbestiform. So...
BY MR. BURNS:
Q Well, the next paragraph down says: "Vermont talcs are derived from altered serpentine - a natural host for asbestiform minerals. There is certainly visible tremolite and actinolite in specific zones of the Vermont deposits - fibrous tremolite was identified by the writer in exposures and cores at the East Argonaut and Black Bear mines. Cyprus staff report past tremolite from the Hammondsville and Clifton deposits."
Did I read that correctly?
A Sorry. Where was --
Q That's the fifth paragraph down, page 2.
A Yeah. So, I mean, you know, in general, tremolite, I'm not concerned about that. Tremolite means to me -- again, without -- unless it's really described in detail, that's consistent with the asbestiform habit, which again is a

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primary growth habit.
You know, I'm not shocked that there's tremolite here. I'm not shocked that there's maybe acicular tremolite or, you know, tremolite that someone might describe, depending on how they used the term "fiber," as -- as fibrous. But I can't -- I can't take anything in here and say, This leads me to believe that there's actually asbestos that's been identified.
Q Is asbestiform tremolite a regulated form of asbestos?
A Asbestiform tremolite is a regulated form, yes.
Q Are you able to discern from the terminology used in this memo -- are you -- strike that.
Are you able to exclude the possibility that the tremolite referenced in this memo is indeed asbestiform tremolite?
MR. FROST: Objection to form, calls for speculation.
THE WITNESS: Well, again, I mean, asbestos is so rare, and, again, takes these special conditions that --
I'm sorry, I lost the -- the question.

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BY MR. BURNS:
Q No problem. I simply asked, can you exclude the possibility that this is asbestiform tremolite that's referenced in the memo?
A Based on everything I have learned and reviewed and understand, yeah, I -- I just can't -- I can't read this and say that this convinces me of anything. I'd, again, need to see field photographs of what this worker saw or photomicrographs, the -- again, a real distinct description that is consistent with the asbestiform habit. And fibers, fibrous, just -- it could mean anything. It could mean a number of things.
Q So it's fair to say that reading this, you would need to see more?
A Yes.
Q Okay. Now, there's a reference in the sixth paragraph down. It says: "Tremolite in these deposits is encountered in the contact zones between the talc and the surrounding schist; in 'grey talcs' in the vicinity of the contacts; and associated with the chlorite/amphibole waste zones within the talc ores that are locally termed 'cinders.'"

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Do you see that?
A Yes.
Q Are you familiar with the term "cinders"?
A I've heard it. I mean, it's not a term that I throw around, but...
Q What is your understanding of what it describes in -- in layman's terms?
A Like I said, I've heard it, but it's not something I use, and so it's not something I feel prepared to define for you.
Q Have you ever investigated cinders in your -- in your work?
A No.
Q When -- were you to investigate -- strike that.
Were you to examine a sample of tremolite to determine whether it was asbestiform, what would you do?
MR. FROST: Objection to form. Outside of the scope of her expertise.
THE WITNESS: Well, I mean, I think it would start with the recognition of -- of fibrils, bundles of fibrils, and, I mean, you could recognize that in an outcrop if -- if you saw

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that. If you've seen, I mean, asbestos in a hand sample, which hopefully you've never held in your hands, I know, but we've got drawers in the rock collection at UVM -- I mean, asbestos is pretty apparent when you see it in -- in person at the macroscopic scale.
BY MR. BURNS:
Q Okay.
A Yeah.
Q And in the microscopic scale, what are you looking for? Is there a certain aspect ratio of the fibers that you're trying to determine?
MR. FROST: Same objection. Beyond the scope of her report and her expertise.
THE WITNESS: Yeah, I mean, there's no one specific aspect ratio. Again, you would -- if it were -- if it were broken down and you were looking at a loose pile of this -- well, again, in bulk, I think it would be clear because you would have long fibrils and bundles, and there would probably be some that might be curved and they might be quite long.
In -- under the microscope, I mean, you would be looking for the same thing, long -- long aspect ratios, but, again, nothing specific

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because it might vary in -- in the population you're looking at.
BY MR. BURNS:
Q Would a 5-to-1 ratio suffice?
MR. FROST: Same objection.
THE WITNESS: No.
BY MR. BURNS:
Q No?
A (Witness shakes head.)
Q Are you aware that that's the ratio specified by the National Institute of Occupational Safety and Health?
MR. FROST: Objection to form. Misstates document.
THE WITNESS: I -- I know that there are 5-to-1 and 3-to-1, depending on the -- my -- the source of the -- the counting criteria, that there are small-aspect-ratio cutoffs for like that. But, again, you know, that's in cases -- those ratios were developed for cases when there's abatement of known asbestos at hand.
So, you know, I would say that I regularly run into minerals that would meet that criteria, 3-to-1 or 5-to-1, and they're -- you know, they can be quite -- well, not that large,

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but, you know -- so, again, scale matters as well.
But, yeah, I don't think that's a -- an accurate cutoff or criterion for -- for issues outside of abatement.
MR. BURNS: Let's mark this one, Amanda.
BY MR. BURNS:
Q We'll mark this as Exhibit No. 13, Dr. Webb.
(Webb Exhibit No. 13 was marked for identification.)
THE WITNESS: (Peruses document.) Okay.
BY MR. BURNS:
Q All right, Dr. Webb. Exhibit 13 is a document with Bates label IMERYS 28 -- 238270 through 238277, and it's titled "Interoffice Correspondence," "Subject: Hamm Mine Core Drilling."
The second paragraph, Dr. Webb, contains the following sentence: "Fibrous amphiboles (actinolite) were observed only within chloritized mafic dikes, extending, in places, a couple of inches into the contacting talc ore."
Did I read that correctly?
A Yes.

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Q Is this the type of statement that would cause you to want to seek more information?
A Not necessarily, because, again, fibrous amphiboles, in general, 99 percent of the time will not necessarily refer to asbestiform actinolite, and -- I mean, I've seen images where, yeah, most of these amphiboles in the region have these long aspect ratios, but, again, they do not meet the criterion of -- of the asbestiform habit.
Q And what criterion are you speaking of in that context?
A Again, well, primary growth habit of fibrils in -- generally in bundles that have long aspect ratios but high flexibility, relatively defect-free surfaces which impact or -- are part of what leads to their chemical resistance.
So, again, without photomicrographs or photos that really give the details of what is meant by fibrous, there's no way to extrapolate from this the presence of asbestos.
Q But given the potential risk and the -- and the fact that you can't exclude the possibility of asbestos, wouldn't you want to seek additional information?
MR. FROST: Objection to form.

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THE WITNESS: No, because, I mean, up and down Vermont, near talc, away from talc, people describe a lot of fibrous amphiboles, and, you know, virtually in all cases they refer to -- this term is used for an acicular habit that is distinctly different from asbestiform.
So, I mean, nothing I read here is surprising to me. It -- it doesn't raise the questions that, you know -- again, in the absence of detailed descriptions, there's --
BY MR. BURNS:
Q And that's even though up and down Vermont, the presence of confirmed asbestos has occurred?
MR. FROST: Objection to form.
THE WITNESS: Virtually all of that is chrysotile, and not amphiboles, and, yeah, there's a lot of amphibole in -- in the Green Mountains, and so -- I mean, long aspect ratio amphiboles are -- are garden variety amphiboles in our state.
MR. BURNS: Let's mark this one -- 14?
(Webb Exhibit No. 14 was marked for identification.)
THE WITNESS: Does anybody have a magnifying glass handy? Shall I do --

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BY MR. BURNS:
Q And just to help you out, I'm going to point you to -- you're welcome to look at the whole thing -- I'm going to focus on the back side of page 2.
A So, yeah, the page where I asked for --
Q The page where you needed a magnifying glass.
A I do have reading glasses in my --
Q Well, let's see, do we have a clean copy here? I can probably blow it up a little bit here.
MR. FROST: You can take this one. It's clean.
MR. BURNS: All right.
MR. FROST: Is that -- can you see that better, Laura?
MR. BURNS: Not yet.
MR. FROST: He's going to try to zoom in on it.
THE WITNESS: I mean, actually, can I get my glasses, and --
MR. BURNS: Sure, absolutely.
THE VIDEOGRAPHER: Going off the record at 5:22 p.m.

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(Pause.)
THE VIDEOGRAPHER: We're back on the record at 5:24 p.m.
BY MR. BURNS:
Q Okay, Dr. Webb, you have Exhibit 14 in your hand, which bears Bates label IMERYS 436951 through IMERYS 436971.
Just one question about Exhibit 13, the preceding exhibit, just a quick question. Had you seen that exhibit before?
A No.
Q Okay. So same question with respect to Exhibit 14 to start, is this a document you've seen before?
A No.
Q Okay. Let's focus on the fourth page in the documents, IMERYS 436954.
A Sorry, is the first -- is this page 1?
Q Yes.
A Oh, okay. So it's the back of the second sheet. Yeah, okay.
Q That's right.
A I'm making sure it's what I actually looked at.
Q No problem. And I've put it up on the

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ELMO, just so we can have a little bit better view of it. I don't know if that's better for you or --
A I'll look at where you're pointing at, and then I'll confer with this too.
Q Okay. These appear to be and are titled "Ore Characterization Summary Sheets." Do you agree with that?
A What was the first word you said, "before"?
Q "Ore Characterization Summary Sheets."
A Yes, this says "Ore Characterization Summary Sheets," yes.
Q Okay. And there appear to be two of these summary sheets side by side dated September '92, specifying ore types and associated materials.
A Yes.
Q And you see in both the presence of actinolite and serpentine is indicated.
A Yeah.
Q Okay. And they are also -- the actinolite and -- the actinolite is noted as a detrimental mineral below each notation; is that right?

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A Yes.
Q Would these notations cause you to want to inquire more as to the nature of these test findings or core samples and the constituency of the minerals?
MR. FROST: Objection to form.
THE WITNESS: Yeah, I mean, again, the presence of actinolite around the ore bodies is, you know, not a shocker whatsoever. I mean, so it doesn't surprise me.
You know, in terms of "detrimental minerals," I don't know what they mean. Obviously these are things that they don't necessarily want in the -- I mean, I don't want to rub actinolite on my face, asbestiform or non-asbestiform, but --
BY MR. BURNS:
Q Are those questions you would want to ask the author?
MR. FROST: Objection to form.
THE WITNESS: No, again, because I wouldn't be surprised about the -- the presence of actinolite generally that -- you know, I'd see this and move on, and again try and find -- well, like in the materials that I looked at, some --

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some indication, some description that would equate this actinolite to asbestiform actinolite.
BY MR. BURNS:
Q Well, if you were blindfolded and the person who obtained and tested the sample told you that it contained actinolite, would you want to rub that on your face?
MR. FROST: Objection to form.
THE WITNESS: It would hurt. I mean, it would be gritty.
BY MR. BURNS:
Q If it was asbestiform, it may be even worse.
MR. FROST: Objection to form.
THE WITNESS: Well, yeah -- but, yeah, I mean, again, you know, actinolite is no surprise. I talk about actinolite in my -- in my report. In the absence of clearcut asbestiform habit --
BY MR. BURNS:
Q You're just not interested in knowing more?
MR. FROST: Objection to form.
THE WITNESS: I mean, well -- yeah, I mean, I -- I feel like I'm not surprised to see actinolite show up occasionally in the tests, and

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that is not a surprise. It's known. I don't know what else to say. It's --
BY MR. BURNS:
Q Have you drawn any -- are you prepared to offer any opinions with respect to the presence or absence of arsenic in the talc in the J&J mines?
A I mean, I -- I'm familiar with some of the -- the literature. It wasn't something that I focused or, you know --
Q Or you were asked to do.
A -- or opined about in my report. So, I know some things, but I didn't prepare in depth on that topic for this deposition.
Q Nor have you offered an opinion on it?
A No.
Q Do you plan to offer an opinion on it?
MR. FROST: Objection to form.
THE WITNESS: Not really, but I guess it depends on what you ask me, the nature of the questions, if there are further questions on that.
BY MR. BURNS:
Q What about any other heavy metals in the J&J talc --
MR. FROST: Objection.

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BY MR. BURNS:
Q -- are you going to offer any opinion on those?
MR. FROST: Objection to form. Assumes there's any metals in the J&J talc.
THE WITNESS: Again, I -- I have some general knowledge, but it's not literature that I reviewed or summarized for here. So I don't feel prepared to -- as we sit here today, to opine on that.
BY MR. BURNS:
Q And just so I can close that loop, any opinion as to the presence or absence of nickel?
MR. FROST: Same objections.
THE WITNESS: I mean, I would say presence, yes. At what levels is where the devil in the details is, so -- and I can't quote you parts per million or parts per billion here, but --
BY MR. BURNS:
Q Same question with respect to cobalt?
A Same answer.
Q Chromium?
A Similar answer, yeah, and, again, I'm --
Q But you're not prepared to offer an opinion as to the presence or absence of any of those minerals?
A Well, again, they're -- they're trace elements that I know have been documented, but, you know, again, I don't have it in my head what -- what those concentrations are or the details of the distribution. So I'm not -- I'm not ready today to -- to comment on that for you.
Q And you haven't been asked to.
A No, I have not been asked to, no.
Q Okay. If you'd go back to Exhibit 1, your report, Dr. Webb.
And I realize the level of detail on page 17 in -- in Figure 9 makes this difficult.
First of all, did the mineral codes or rock codes vary across maps, or can they vary?
MR. FROST: Objection to form.
THE WITNESS: Each of the different colored or patterned units here is a different -- is a different rock unit. So, yes, there's a distribution of different rock types here in this --
BY MR. BURNS:
Q Well, by that I mean -- let's see, this map was taken from --

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A It's Ratcliffe, et al., 2011.
Q 2011. Okay. Which was a GS -- USGS map, right?
A (The witness nods.)
Q And have you cited or described any non-USGS maps in your report?
A Well, I mean -- well, Karabinos -- not a specific map -- well, actually, there are -- in Karabinos, et al., 2010, I talk about the isograds. Again, the -- the lines that you would draw on the map that delineate boundaries between rocks that have experienced the same pressure temperature conditions during a metamorphic event.
Q Okay. And what I'm really getting at are -- is not necessarily the separation into different codes, but the codes themselves that are used for rocks that are relevant to your analysis. Can those vary across maps, meaning between the USGS maps and the other map you just described?
A Oh, they might.
MR. FROST: Objection to form.
BY MR. BURNS:
Q Do you recall offhand the specific rock codes that you viewed as relevant to your analysis in this particular case?

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A I believe the -- I'd have to look at the -- the map -- the map index to really confirm, but I believe that the ultramafics here are the CZU, and that, in general -- I mean, the -- the country rocks that host those bodies are -- that's the Mooretown information, but the -- O something. I -- yeah, sorry, I don't have the code memorized.
Q Okay. Are you familiar with any reports of mass fibers, mass asbestos fibers in Vermont talc deposits?
A No.
Q Are mass fibers relatively rare?
A Yes.
Q Where do they typically occur?
A Well, I know they've been documented at Belvidere Mountain. And also out in California in -- I'm not going to be able to remember the name of the -- of the body. But it's, yeah, in limited instances and much rarer occurrences than the cross and slip fiber occurrences.
Q Okay.
MR. BURNS: We have a couple of documents that we had pulled out that we need to figure out what to do with. You want to mark these individually or wait till we mark the --

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MS. O'DELL: Let's mark them individually.
MR. BURNS: Okay. That may make -- let's go off the record for a second.
THE VIDEOGRAPHER: Going off the record at 5:35 p.m.
(Recess.)
THE VIDEOGRAPHER: We're back on the record at 5:43 p.m.
BY MR. BURNS:
Q Hello again, Dr. Webb.
MR. BURNS: So, first of all, a bit of colloquy between counsel here. Defense counsel was kind enough this morning to bring in two boxes, which I believe were identical, of documents that defense counsel had put together that constitute what they believe to be, I think, the vast majority of your reliance materials with maybe the exception of Winter.
MR. FROST: I think that's the only one we found was missing thus far.
MR. BURNS: Thus far. So we have agreed to simply mark one of the boxes as Exhibit 15, with the stipulation that the box and its materials were gathered and prepared by counsel

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and not by Dr. Webb, although they hopefully approximate her reliance materials.
MR. FROST: Yep, that's fair, and that -- that's a fair statement of the agreement we reached.
MR. BURNS: All right. Great. Thanks, Mr. Frost.
BY MR. BURNS:
Q So we will mark that box Exhibit 15. There are a couple of documents, Dr. Webb, that we're just trying to figure out what they are, frankly, and we'll mark those as 15A and 15B.
(Webb Exhibit Nos. 15, 15A and 15B were marked for identification.)
BY MR. BURNS:
Q And I'll hand you 15A first.
There's 15B. B as in boy.
A I would want to confirm this, but my first impression is, is that this is from the spreadsheet that is part of Van Gosen 2006.
Q And that's referring to Exhibit 15A, is it not?
A Yes. 15A, yes.
So I believe, you know, if you go to the site, the USGS site from which you can download

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the map that I talked about that plots presumable asbestos localities in Vermont, there are some supporting documents, and in those, yeah, was this list -- I mean, it was for all of New England, but this is the sheet that's specific to Vermont, and it gives the latitude, longitude. And then this is the list of references that I said that I tried to dig into on my own to confirm those occurrences.
Q Okay. So just to be clear, 15A is not a document that you believe you prepared; is that right?
A Oh, yeah. No, I didn't prepare this. I think we could go and download the Excel file off the USGS website, and this is what would be in that.
Q I see.
MR. BURNS: And you can let us know with an errata, I would assume, if that's not -- not the case.
MR. FROST: Yeah, we'll confirm that.
MR. BURNS: Okay.
THE WITNESS: And I'm not sure, because when I went into the references, I went into the list that was specific to Vermont that's shown

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here in 15A.
My guess is that this is the -- the list of references that accompanied the -- the map more directly. So this would include -- again, this particular report was asbestos in New England or the northeastern United States, so he had these spreadsheets specific to each state. And then I think this is the -- a compilation of all these for -- for all of the sites that -- but, again, I -- we'd have to -- we should be able to download this from that same website, the USGS site.
BY MR. BURNS:
Q Thank you, Dr. Webb.
MR. BURNS: And I guess we'll just confirm that.
MR. FROST: Yes. Same thing, if we confirm something different, we'll mark it in the errata sheet.
MR. BURNS: Okay. Thank you.
So do we have a standalone one like this?
MS. O'DELL: No, that's all we have.
MR. BURNS: Okay. Let's make sure we've got -- this one is marked, so we probably want to make sure that there's a clean version in the

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actual Exhibit 15 box.
MR. FROST: What document is this, Leigh?
MR. BURNS: This is the English translation.
MR. FROST: Yes, that's definitely not in the box.
MR. BURNS: Oh, it's not?
MS. O'DELL: I found it in the box.
MR. FROST: Oh, you did find it in the box? Oh, okay.
MS. O'DELL: It was a few tabs after --
MR. FROST: I see. You had -- yeah, I did it too, Laura. Let's see if we can find a clean copy.
MR. BURNS: Thank you.
MR. FROST: You don't happen to know the number, do you?
MR. BURNS: Leigh.
(A discussion was held off the record.)
THE VIDEOGRAPHER: Going off the record at 5:48 p.m.
(A discussion was held off the record.)
THE VIDEOGRAPHER: Back on the record at 5:50 p.m.

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(Webb Exhibit No. 15C was marked for identification.)
BY MR. BURNS:
Q Okay. Dr. Webb, we have handed you Exhibit 15C, C as in Charlie.
Is this the English translation of the Chinese article that we were looking at earlier?
A I believe so, yes.
Q Okay. Now, in looking through this -- and this was an article on which you relied in rendering your opinions with respect to the Chinese mines; is that right?
A I did, yes.
Q Okay. Now, in terms of the orogen of the talc in those mines, is it fair to say that the -- that the orogen of the talc was in part tremolite existing in the region?
A I'm sorry, I don't -- I don't understand the question.
Q Sure.
Let me just turn you to page -- well, there's a page -- let's see.
A I'll work with you.
Q Four pages before the end.
A Okay. So this one with the --

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Q That's it, I think.
And perhaps I wasn't precise enough or didn't use the right terminology, but if we walk through this page, I think you'll see where I'm going.
So the article refers to the mother rock that is directly related to mineralization is dolomite marble. Do you see that?
A Yes.
Q And by "mother rock," that would be the rock that was changed ultimately to talc?
A Yeah, so in my report that's the protolith.
Q Okay. The protolith.
Now, it goes on to say: "This formation contains 19 percent magnesium oxide in this zone, so the requirement for generating the talc ore deposit cannot be completely satisfied, and magnesium oxide must be absorbed from the external surrounding rock to supplement, and the surrounding rock that satisfies this formation condition is spilite." Is that right?
A Yes.
Q It goes on to say: "In this zone, the content of MGO in spilite is 8.14 percent on

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average. Through rock-mineral determination and analysis, magnesium oxide is mainly concentrated in the tremolite, the content" -- parentheses, "the content of tremolite in spilite is 30 to 35 percent."

Is that correct?

A Yes.

Q Okay. So in this case, would the tremolite existing in the spilite also be considered a protolith to the talc?

A Well, it's part of the metasomatic process. So what he describes here is, again, that there is diffusion of chemicals, of elements across the rock boundaries. And what he said is that basically if you look at the mass balance, you can't just form the talc that's present solely by the chemistry of the -- the dolomite alone. So that there was diffusion of magnesium across the rock boundary from the -- the spilite into the dolomite.

So, no, I mean, the protolith is still the -- the carbonate rock, but the magnesium that's ultimately in the talc, some percentage of that diffused from the -- the spilite.

Q Which the source of that magnesium was

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the tremolite in the spilite, correct?

A Yeah, that was the -- the magnesium-bearing mineral in the spilite, yes.

Q Okay. And the tremolite -- content of the tremolite and spilite was 30 to 35 percent, correct?

A Yes, that's what it says.

Q Is it possible that -- excuse me -- is it possible that tremolite was not fully assimilated into the resulting talc such that tremolite remains in the talc ore?

MR. FROST: Objection to form, misstates document.

THE WITNESS: Such that tremolite -- what was the last part?

BY MR. BURNS:

Q Remains in the talc ore.

A I think you mean remains in the spilite?

Q Well, what I'm getting at is some percentage of the magnesium would have come from the -- from the talc or from the tremolite -- let me strike that.

Some percentage of the magnesium oxide would have come from the tremolite in the spilite, correct?

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A Yes.

Q And that magnesium -- would that magnesium oxide have been contributed from the tremolite to form the -- to form the talc by -- actually, strike that.

Why don't I just ask you this question: How would the tremolite contribute that magnesium oxide to the formation of the talc ore?

A There would be, I mean, a metamorphic reaction. So -- and, actually, I think he describes this in here. I'd have to again kind of look at this in -- in more detail, but -- but basically the tremolite is -- is reacting -- well, undergoing a chemical reaction where the magnesium is liberated, and so then you're going to have residual silicon dioxide and also calcium, and some of that calcium I believe is contributing to the formation of -- of carbonate, of calcite in this case.

So the tremolite that does break down is no longer there. The magnesium went into the talc, in the talc ore, and the residual calcium and silica probably formed quartz and calcite.

Q Okay. Is it possible that the remaining tremolite could have been interspersed with the

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talc ore?

A Yeah, I don't -- I don't think so. It seems that they describe -- the boundaries are still pretty -- pretty clear. So -- but again, you know, I wouldn't be surprised if there was a little bit of tremolite maybe in with the -- the talc, but that doesn't mean anything in -- you know.

Q Without further question.

A Yeah, I mean, you know, my -- the default would always be that it's prismatic tremolite or, again, maybe acicular tremolite or ablated tremolite, but this is not a recipe for making tremolite asbestos.

Q Why would that always be the default?

A Because asbestos is so rare. I mean, I've seen tremolite in a lot of rocks, but I've never seen tremolite asbestos in -- again, in my own studies, and that -- you know, and most people haven't. You know, there's basically -- what are the statistics I quoted in my report? That of the amphiboles present in rocks in the continental crust, less than 1 percent by volume, I think, are asbestiform.

And so, you know, it really takes

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special conditions, a special situation to create that, and what is described here is not --
Q What percent --
A -- anything that leads me to believe that this resulted in tremolite asbestos.
Q What percentage of the crust do amphiboles make up?
A They're the fifth most common mineral generally in the continental crust, and, I mean, it depends on where you are. I think, you know, it's maybe -- let me check because I wrote something about this. I don't want to misspeak.
So in the coterminous United States by area, 6 to -- 6 to 10 percent of the rock types exposed at the surface are amphibole bearing.
Q And so 1 percent of that 6 to 10 percent would be asbestiform?
A Or less than 1 percent by volume of -- of all amphiboles, yes.
Q That would still be a pretty significant volume of rock, though, would it not?
MR. FROST: Objection to form.
THE WITNESS: Yeah, but it -- again, it takes special conditions. So where asbestos is formed, it's well documented by multiple

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instances, and it -- you know, it's rare. I -- just, you know, I wouldn't -- I would never expect if someone says tremolite or actinolite that they mean actinolite or tremolite asbestos unless it's -- that is specified in -- in those words, asbestiform.
MR. BURNS: Can we just go off the record for a minute?
THE VIDEOGRAPHER: Going off the record at 6:00 p.m.
(Recess.)
THE VIDEOGRAPHER: We're back on the record at 6:07 p.m.
BY MR. BURNS:
Q Dr. Webb, I believe you testified that you had reviewed Drs. Cook and Krekeler's reports; is that correct?
A Yes.
Q Okay. Now, did you review all of the reliance materials that were listed in those reports?
A Well, for -- particularly for the petrology related piece that I was specifically interested in, I did look up some of their citations. I wouldn't say all of them necessarily

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or I was familiar with many, but --
Q Did you look up Robert Virta, 1985, Bureau of Mines?
A I have seen that.
Q Okay. Do you recall reading it?
A Yeah. Can -- actually, can we see the exact citation, because I just want to --
Q I think we could mark it. Right?
(Webb Exhibit No. 16 was marked for identification.)
MR. FROST: Are we on 17?
MS. KLEVORN: 16.
MR. BURNS: 16, yep.
MR. FROST: That's right, because you marked everything as A, B or C, right?
Thank you.
THE WITNESS: Uh, I -- I believe I have seen this, but, again, it really wasn't of -- of interest because it's from New York. So it didn't pertain directly to the petrology of -- of the mines of interest.
BY MR. BURNS:
Q Do you recall there being references to talc mines within this document?
A I really have to read it again, because,

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again, I didn't -- I didn't review it in preparation for today. I -- I don't believe it was on my reliance either.
Q Okay. So this had -- you don't recall this report having any impact on your opinions. Is that correct?
A Yeah, I mean -- again, I mean, the samples are specific to the Gouveneur mine in New York state. So -- no, it didn't -- it didn't feed into my -- the opinions I presented in my report.
Q Okay. What about Charles Ratte, 1982?
A Yes, I've seen that. The state geologist report?
Q Right, the state geologist of Vermont, correct?
A Yes.
Q Did you review that report before --
A I --
Q I'm sorry, go ahead.
A No.
Q Did you review that report prior to rendering your opinions?
A Yes.
Q And did it impact your opinions at all?
MR. BURNS: Let's go ahead and mark it.

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THE WITNESS: I don't think it was a -- a key player. I think I saw some things in there that seemed inconsistent with other data, and -- but, again, the details I don't have in my head.

(Webb Exhibit No. 17 was marked for identification.)

BY MR. BURNS:

Q Is that the report you reviewed?

A Yes. I recognize this, yeah.

Q And we've marked that as Exhibit 17. Okay.

MR. BURNS: All right. We have no further questions.

MR. FROST: Okay.

CROSS-EXAMINATION

BY MR. FROST:

Q So, Laura, I apologize. Sitting next to you is just going to make this, you know, a little more awkward, but I'm going to ask you a couple of questions now.

MR. FROST: Do you have Demonstrative 2, as you used it and marked it?

THE WITNESS: I do.

BY MR. FROST:

Q You have -- you have Exhibit 2, I think.

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A Oh, sorry.

Q It's Demonstrative 2.

A It shows you what I know about --

Q I'm going to hand you what was previously marked as Plaintiffs' Demonstrative 2.

MR. BURNS: Yeah, so we want to enter that into the record.

MR. FROST: That's fine. We can mark that -- maybe we could mark it as Plaintiffs' Demonstrative 2 --

MR. BURNS: Yeah. So all I was getting at, if you're going to mark a version, we should --

MR. FROST: I'm not going to touch it.

MR. BURNS: Okay.

MR. FROST: No, I'm not going to mark it up. I just wanted to give it to her.

MR. BURNS: Go ahead.

BY MR. FROST:

Q Do you remember this document from earlier today?

A I do, yes.

Q Okay. Does this demonstrative accurately reflect your qualifications, knowledge, training and experience to render an opinion in this case?

A No, it doesn't.

Q What is the best and most complete statement of your opinions with the context necessary to understand them?

A Well, that would be my expert report.

Q And that's the document that was marked as Exhibit 1 today?

A I believe so.

Q And what is the best, most complete summary of your qualifications, knowledge, training and experience to render an opinion in this case?

A Well, that would be my curriculum vitae.

Q And do you recall going through and answering many of the questions -- or I guess all the questions that are in Demonstrative 2; is that correct?

A Sorry, in this document?

Q Yeah, you remember going through these?

A Yeah. Yes.

Q Do any of these questions and your answers to them affect your -- affect your ability to render an opinion here?

A No.

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Q Okay. I'm going to reach over if you don't mind.

Here, sorry.

Well, I will just show you my copies for purposes of what we're doing here. Okay.

All right. Do you recall being shown earlier today various documents marked as Exhibit 12, Exhibit 13, and Exhibit 14?

A Yes.

Q Do you have those there?

A Yes.

Q Okay. Are any of these documents the type of documents that a petrologist would consider in undertaking a review of the geology and petrology of the geological formation?

A No.

MR. FROST: That's all the questions we have.

MR. BURNS: Okay. Just a couple follow-up.

REDIRECT EXAMINATION

BY MR. BURNS:

Q One, just so it's clear, why don't we mark as Exhibit 18 the --

A The demonstrative?

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Q -- what I was calling Plaintiffs' Demonstrative 2, just so it's in the record.
A It's now buried in the stratigraphy pile.
MR. FROST: There it is.
(Webb Exhibit No. 18 was marked for identification.)
BY MR. BURNS:
Q All right. You can put that over there.
And finally, Dr. Webb, thank you for your time today. I did want to mark off that we did cover your report and opinions on Plaintiffs' Demo 1.
MR. BURNS: All right. Thank you very much.
MR. FROST: Great. Thank you, Warren. Thank you, Leigh and Amanda.
THE VIDEOGRAPHER: This ends today's deposition.
We're going off the record at 6:14 p.m.
(Whereupon, the deposition of LAURA WEBB, Ph.D. was concluded at 6:14 p.m.)

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CERTIFICATE OF CERTIFIED SHORTHAND REPORTER
The undersigned Certified Shorthand Reporter does hereby certify:
That the foregoing proceeding was taken before me at the time and place therein set forth, at which time the witness was duly sworn; That the testimony of the witness and all objections made at the time of the examination were recorded stenographically by me and were thereafter transcribed, said transcript being a true and correct copy of my shorthand notes thereof; That the dismantling of the original transcript will void the reporter's certificate.
In witness thereof, I have subscribed my name this date: March 30, 2019.

_____
LESLIE A. TODD, CSR, RPR
Certificate No. 5129

(The foregoing certification of this transcript does not apply to any reproduction of the same by any means, unless under the direct control and/or supervision of the certifying reporter.)

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INSTRUCTIONS TO WITNESS
Please read your deposition over carefully and make any necessary corrections. You should state the reason in the appropriate space on the errata sheet for any corrections that are made.
After doing so, please sign the errata sheet and date it.
You are signing same subject to the changes you have noted on the errata sheet, which will be attached to your deposition. It is imperative that you return the original errata sheet to the deposing attorney within thirty (30) days of receipt of the deposition transcript by you. If you fail to do so, the deposition transcript may be deemed to be accurate and may be used in court.

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ACKNOWLEDGMENT OF DEPONENT

I,_____, do hereby certify that I have read the foregoing pages, and that the same is a correct transcription of the answers given by me to the questions therein propounded, except for the corrections or changes in form or substance, if any, noted in the attached Errata Sheet.

_____

LAURA WEBB, Ph.D. DATE

Subscribed and sworn to
before me this
_____day of_____,20___.
My commission expires:_____

_____

Notary Public